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The R. H. Fetherston Memorial Lecture.[1]

POPULATING THE ANTIPODES, OR MIGRATION, MOTHERHOOD AND MIDWIFERY IN THE MAKING OF VICTORIA.

By ROBERT FOWLER,
Melbourne.

I HAVE the honour and the responsibility of delivering this, the third, R. H. Fetherston Memorial Lecture. The provisions of the foundation are such that the lecturer is expected to draw attention to some subject of relevance to health promotion and disease prevention in child-bearing women. Throughout a long and versatile career Dr. R. H. Fetherston was especially interested in the well-being of child-bearing women, not only as a practising obstetrician and gynæcologist, but also as a far-seeing humanitarian and social biologist. As medical practitioner he was concerned with the trials and tribulations of individual patients; as legislator, councillor and administrator he was no less concerned with the health needs of the population as a whole.

Tonight I propose to commemorate Fetherston's activities as legislator, councillor and administrator, partly because I consider his best work was done in defining medical policy and in planning medical establishments, also partly because I consider that the time is opportune for public discussion of the theoretical basis of all such planning. The problem of the planner is to determine both a qualitative and a quantitative relationship between community health needs on the one hand and community health services on the other. To do this he must study demography, that is, the history of the people in terms of vital statistics and census reports. In venturing to address you on certain features of our demographic history, I shall endeavour to place the emphasis where Fetherston would have wished—namely, upon the long-term trends of female demography, especially those trends which in any way refer to the population's response to the reproductive impulse over the last 100 years. I shall touch upon such items as the growth and distribution of Victoria's population, its age and sex composition, the birth rate and fertility, the death rate and longevity, maternal and neonatal mortality rates, and so on; not that any of these topics will be brought to a logical conclusion, but mere presentation of the factual data, mainly in graphic form, will serve to illustrate the fact that the health needs of Victoria are peculiar to the Victorian people and have grown up with them.

The relatively short history of Victoria affords a clear-cut and close-knit example of the ecological development of the white race in a new land; and, thanks to a line of distinguished and diligent demographers, we possess an authentic statistical description of this development right back to Captain Lonsdale's first census in 1836. These statistics are of the utmost importance to all those who have the responsibility of planning our health services, since here we have, succinctly stated, the truest available measures of the state of the public health. Demographic history is no exception to the general rule that history seldom fails to find the pilots for posterity.

It is a welcome coincidence that this lecture is being given at a time and place of historical significance to the

[1] Read at a meeting of the Victorian Branch of the British Medical Association on April 27, 1951, at Bendigo.

people of Victoria. One hundred years ago the discovery of gold revolutionized this colony by changing it, almost overnight, from an unconsidered corner in an out-of-the-way wilderness to a world-renowned community teeming with eager immigrants. At that time the settlement was seventeen years old and had a population round 77,000. Within seven years this number had jumped to half a million and a new venture in populating the Antipodes had begun. The sanitary conditions were so primitive, the health hazards so great, that one hesitates to recall them. Now all that is past and we rejoice with pride in the institutions and discoveries that brought the change about. Nor can we forget the fortitude of those pioneering women who played their destined part. As Councillor John Michelsen, of Bendigo, has said: "Although women were a little slow in settling on the goldfields, when they did arrive, their coming marked the turning point in the district's history, since women sought security for their families."

The Size and Growth of Victoria's Population.

The permanent settlement of Victoria was initiated by migrants from Tasmania in 1834. It is true that, thirty years earlier, a tentative "settlement" was made by Lieutenant-Colonel David Collins and his party of 402 persons in Her Majesty's ships *Calcutta* and *Ocean*. This expedition landed at Sullivan's Bay (near the present Sorrento) and remained about five months, during which time there occurred one marriage, one birth and one death. Finding no permanent water supply, the party abandoned this inhospitable shore and transferred to Tasmania.

From the zero mark in 1834, the population of Victoria has grown to approximately 2,250,000 at the present time; its size and rate of growth at various dates are shown in Table I. We may more fully appreciate the rate of growth by reference to Figure I, which depicts separate growth curves for male and female populations from 1840 onwards. The chart is mapped upon a semi-logarithmic grid, which means that time intervals are shown in arithmetical progression along the base line and increments of population are shown in geometrical progression along the ordinate scale. There is no need to puzzle over this mode of mathematical expression; simply regard it as a device for showing on the one diagram differences of such magnitude that it is impossible to show them otherwise. For example, inspection of the chart shows that the female population grew from 3000 in 1840 to just over 1,000,000 in 1947.

By mathematical fitting of slope-lines (*a a'*, *b b'*, *c c'*) to the growth curve for females (Figure I) we can state precisely the rate of growth during selected periods. For example, between 1841 and 1861 the average annual increase in the female population was 21·0%; between 1861 and 1901 it was 2·5%; and between 1901 and 1947 it was 1·2%. Similar treatment of the curve for males is precluded by its erratic course prior to 1901; but, since the slope-line (*c c'*) fits both curves between 1901 and 1947, we can say that during the latter period the average annual increase of the population as a whole was 1·2%. Should this rate continue, the population will reach double the 1947 figure in about fifty years; but already the rate shows signs of acceleration. It is hazardous to predict so far ahead, but current indications are that, with the amplification of both immigration (Figure VI) and natural increase (Figure VII), it is not unlikely that Victoria, already the most densely populated State in the Commonwealth, will need to expand her health services sufficiently to meet the requirements of 4,000,000 by 1980.

Geographical Distribution of the People.

The early settlers of Victoria were mainly located in the Port Phillip area and in the western district. In 1841 Melbourne was the only town of any consequence and accommodated 55% of the population (Figure II). The "gold-rush" of the 1850's emptied Melbourne to its lowest ebb, and it was not until industrialization began in grim earnest that the drift to the metropolis flowed full tide. At the present time 60% of Victoria's 2,250,000 reside in Greater Melbourne.

From the point of view of health services (which include medical, dental, nursing, pharmaceutical, ambulance and hospital establishments), the implications of this disproportionate geographical distribution are many and varied. The ever-expanding needs of the metropolitan

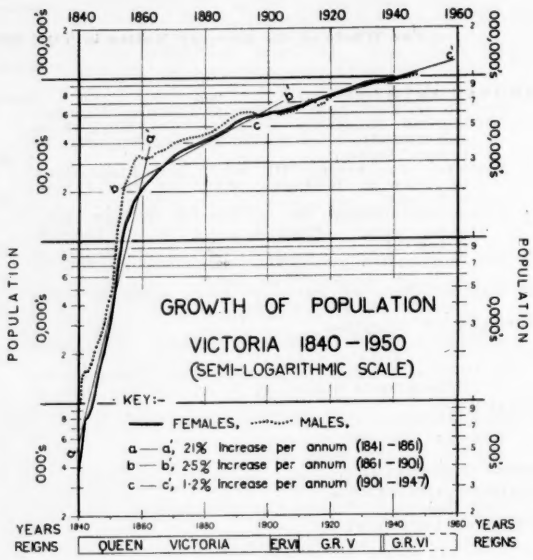

FIGURE I.

Size and growth of Victoria's population. The mean annual numbers of males and females are plotted logarithmically for each year from 1840 to 1947 inclusive. (For further details see text.)

community cannot be measured or met without appraisal of the relevant demographic data; to ignore demography is to court disaster. A case in point is the present deplorable position with regard to maternity hospital

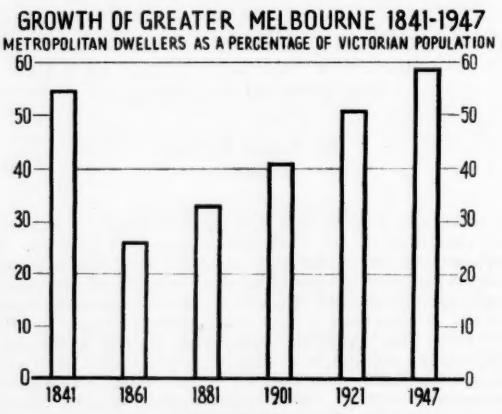

FIGURE II.

Growth of Greater Melbourne. The relative number of metropolitan dwellers is given for every alternate census year from 1841 to 1947 inclusive. Note that the boundaries of Greater Melbourne were extended in 1929 and redefined in 1947.

beds. The so-called "crisis" is a crisis only in the sense that members of the staff of the Women's Hospital have at last decided they can no longer continue the heart-breaking struggle against the everlasting and ever-mounting overload. The inevitability of this unfortunate

situation was predicted years ago by those who saw the writing on the wall, as there was no difficulty in isolating long-term trends from transient intercurrent episodes.

Age Structure and Sex Composition of the Population.

Two attributes of singular importance to demography are the age structure and sex composition of a population. Even in the older countries these attributes have undergone considerable modification over the last hundred years, so that, in a colonial community such as ours, it is not surprising to find even more striking episodal changes and trends. The forces at work have been both natural and cultural, with the result that, from time to time, the biological age-sex structure has been disturbed by such factors as migration, voluntary limitation of families, and medical science. Let us select for comparison the Victorian populations of 1881 and 1947, first with regard to age structure and then with regard to sex ratio. Table II is a summary of the age distribution in the two populations under review; it will be seen that between the two dates there was a 40% drop in the under twenty years age group and a threefold increase in the over sixty years age group. Table III is a summary of the sex ratio at different ages in the two populations under review; it will be seen that for every 1000 females in the population at large there were 1073 males in 1881 as against 974 in 1947.

TABLE I.

Population of Victoria at Various Dates, 1841 to 1941.

Date.	Total Population. (Thousands.)	Increase in Previous 20 Years. (Thousands.)	Increase as a Percentage of Population 20 Years Before.
1841 ..	20	—	—
1861 ..	542	522	2610
1881 ..	874	332	61
1901 ..	1210	336	38
1921 ..	1551	341	28
1941[1] ..	1946	395	25

[1] No census was taken in 1941. The figure given is an estimate of the population based upon the 1933 census and readjusted after the 1947 census.

TABLE II.

Summarized Comparison of Age Structure: Victorian Population, 1881 and 1947.

Age. (Years.)	1881.		1947.	
	Thousands.	Percentage of Total.	Thousands.	Percentage of Total.
0 to 19 ..	432	50·8	639	31·1
20 to 39 ..	225	26·5	638	31·0
40 to 59 ..	154	18·1	507	24·7
60 and over ..	39	4·6	271	13·2
Total	850	100·0	2055	100·0

An ingenious method of diagrammatic representation of age-sex structure is known as the "population pyramid". We have time just to glance at a few examples. Figure IIIA is a more or less symmetrical pyramid, drawn to scale, of Great Britain's population in 1891. The sex balance is approximately equal and every age group is substantially larger than the next later age group, a state of affairs we might regard as "ideal". In 1947 Great Britain's "pyramid" was a "haystack" like our own (Figure IIIB): it bulged in the middle. In the case of Victoria, this diagram reflects the past history of births and infant migration; for example, the people aged thirty to thirty-four years in 1947 are survivors of a group either born or arriving as juvenile migrants during the period from 1913-1917, when both the birth rate and the influx of migrants were relatively high; on the other hand, the constricted age group ten to fourteen years is the result of a low birth rate and negative migration during the depression. In the same way the peculiarly shaped pyramid for Victoria in 1881 (Figure IIIC) reflects the preponderance of young males in the days of the gold rush thirty years earlier.

Meanwhile let us look at a diagram that illustrates the aging of the female population in Victoria over the last hundred years (Figure IV). Note that, owing to the decline in mortality, more and more people are living longer, and hence the rising proportion of "post-matures". Note also that, owing to the decline in fertility, fewer and fewer people are being born and hence the falling proportion of "immatures". The next diagram (Figure V) illustrates the trend of Victoria's femininity index over the same period. Expressed as the number of females per 100 males, this index has risen from 42 in 1841 to 103 in 1947. The sex ratio for the human species (that is, the number of males to 100 females) is an interesting biological phenomenon and needs consideration in three phases—primary, secondary and tertiary. The primary sex ratio (that is, as at fertilization) is unknown; theoretically it should be 100, but inference leads us to suppose that it is much higher (that is, more masculine than feminine), since the secondary sex ratio (that is, as at birth) never ranges much below 104, in spite of a prenatal mortality (that is, stillbirth and abortion) which falls more heavily on the male than on the female fœtus. Whereas the secondary sex ratio is constantly masculine (between 104 and 106), the tertiary sex ratio (that is, in the population at large) varies considerably,[1] because it is dependent not only upon the secondary sex ratio, but also upon inconstant mortality rates and upon migration movements.

Migration in the Making of Victoria.

Three of the principal factors in the making of Victoria have been, and will continue to be, (i) migration, (ii) motherhood, and (iii) mortality. We shall now consider each of these interacting factors in turn. By the "making of Victoria" I mean the qualitative and quantitative development of her people. This development, as was already stated, began with migrant settlers in 1834. Since then the net gain of population by migration has amounted

[1] Victoria experienced a tertiary sex ratio of 239 in 1841 compared with 97 in 1947.

TABLE III.

Comparison of Sex Ratio in Successive Age Groups: Victorian Population, 1881 and 1947.

Age Group. (Years.)	1881.			1947.		
	Males.	Females.	Sex Ratio.[1]	Males.	Females.	Sex Ratio.[1]
0 to 19	216,002	215,577	100·2	324,884	313,853	103·5
20 to 39	111,368	113,694	98·0	315,077	321,448	98·3
40 to 59	88,738	65,038	136·4	251,019	256,200	97·9
60 to 79	22,557	14,533	155·2	110,250	132,389	83·2
80 and over	1,089	842	129·3	11,737	16,944	69·3
Total	439,754	409,684	107·3	1,013,867	1,040,834	97·4

[1] The sex ratio is expressed as the number of males to every 100 females.

to approximately 660,000 persons (*vide* Table IV). It is important to remember that this gain represents the net balance of an inward and outward movement, the annual fluctuations of which are shown in Figure VI. Inspection of this chart reveals no sign of a long-term trend; the ebb and flow of migration have been determined by economic and political episodes—one after another.

Thus far we have merely discussed migration from the quantitative point of view. In Figure VI a qualitative

FIGURE IIIA.

Graphic presentation of age-sex structure of selected populations (for description see text). Great Britain, 1891 (redrawn from Report of Royal Commission on Population, His Majesty's Stationery Office, 1948).

distinction is drawn between "male" and "female", but no distinction is made between "race" and "age". We may say at once, however, that in the past migrants have been almost entirely of British descent,[1] and that the earlier age groups have largely predominated. Hitherto these facts have simplified the problems of quarantine and health-screening of migrants, but in recent years the immigration programme includes large numbers of

TABLE IV.

Natural and Actual Increase: Victoria, 1834 to 1949 (Thousands).

Period.	Natural Increase (Excess of Births over Deaths).	Net Gain (+) or Loss (−) by Migration.	Actual Increase.
1834 to 1839	—	+5	5
1840 to 1859 ..	64	+379	443
1860 to 1879 ..	292	+28	320
1880 to 1899 ..	333	+14	347
1900 to 1919 ..	333	−18	315
1920 to 1939 ..	303	+81	384
1940 to 1949 ..	197	+100	297
Total[1]	1522	+589	2111

[1] These totals have been cumulated to June, 1949. The figures given in the text include subsequent increments up till April, 1951.

"foreigners" and "displaced persons" whose health attributes are not above suspicion. Obviously the utmost vigilance will be needed in the selection and admission of immigrants, in order to ensure compliance with ordinary standards of health as well as with eugenic requirements in matters of race, sex and age.

Motherhood versus Mortality in the Making of Victoria.

Since "natural increase" is the excess of births over deaths, we may take it that, for the whole of Victorian demographic history, there has been a natural increase, in round figures, of 1,590,000 persons (3,090,000 births less 1,500,000 deaths). The influence of natural increase upon actual increase is shown in Table IV. A detailed plotting of birth rate, death rate and rate of natural increase[1] will be found in Figure VII. The independent variables are the birth rate and the death rate; the rate of natural increase varies as the difference between the other two. It will be seen that, underlying the annual fluctuations, a long-term

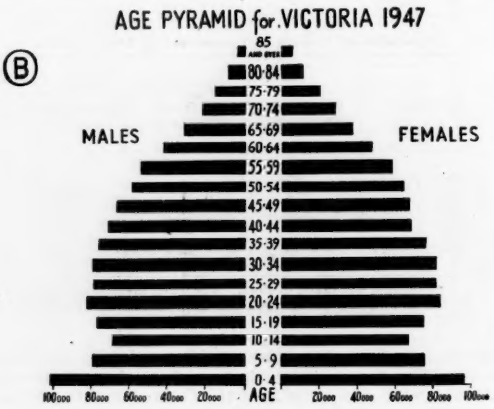

FIGURE IIIB.

Graphic presentation of age-sex structure of selected populations (for description see text). Victoria, 1947 (drawn to scale from data supplied by Victorian Statist).

downward trend is discernible in all three rates from 1862 to 1932. It follows that the very great contraction in the rate of natural increase during this period was brought

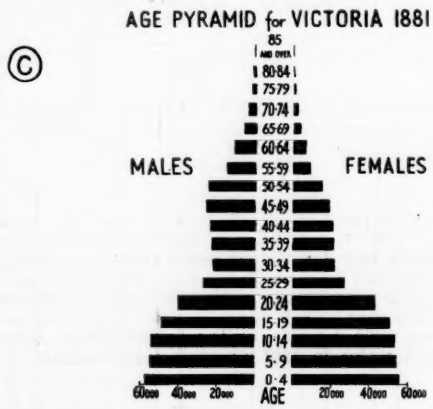

FIGURE IIIC.

Graphic presentation of age-sex structure of selected populations (for description see text). Victoria, 1881 (drawn to scale from Census reports by H. H. Hayter, C.M.G.).

about not by a rise in the number of deaths, but by a large fall in the number of births. From 1933 onwards the death rate has remained more or less stationary (10‰), whilst the rate of natural increase has risen with the birth rate.

[1] During the gold rush many foreigners, including Asiatics, entered the colony. When in 1901 the control of immigration passed to federal authorities, a "White Australia" policy soon became effective. It appears that the aboriginal inhabitants were never numerous; in any case they were rapidly displaced by the colonists and at the present time number less than 1000 in the State of Victoria.

[1] It is customary to express these quantities as rates per 1000 *per annum*; for example, the birth rate is the number of live births in a given year divided by the mean total population of that year and multiplied by 1000. All rates may be taken as annual rates unless otherwise stated.

It is not unusual to find the birth rate (and the death rate) referred to as "crude". This does not mean that a particular rate is based upon careless or haphazard enumeration; it means that it is based upon a denominator that may not always signify exactly the same thing. For example, the crude birth rate is based upon the total number of males and females of all ages in the population of a particular year; but, as we have already seen (Tables II and III), the age-sex structure of a population may

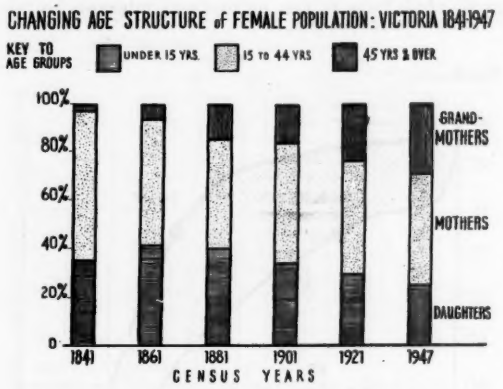

FIGURE IV.

The aging of Victoria's population (female). Note the progressive increase in the proportion of "post-matures" as compared with the decrease in "immatures". The proportions given are based upon alternate census enumerations. At the same time, a similar aging process has affected the male population.

show considerable variation from time to time. From Figure VII we read that the Victorian birth rate for 1862 was three times larger than that for 1932; yet, on further

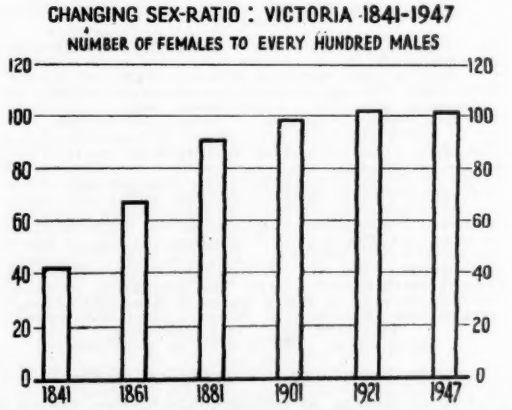

FIGURE V.

The changing sex ratio of Victoria's population. Note that the sex ratio is presented as the number of females to every 100 males; this is an inversion of the conventionally expressed ratio. The inverted sex ratio may be spoken of as the "femininity index". The proportions given are based upon alternate census enumerations.

analysis, it will be found that whereas the birth rate of 1862 was based upon a population comprising 20% of women of child-bearing age, that of 1932 was based upon a population with 24% of such women. Obviously the average family size in 1862 was much larger than the average of 1932, and the only way to measure such differences is to relate the number of births in a given year to the number of child-bearing women in that year. This latter ratio is termed the fertility rate, and as such may be used for comparing the size of families from one generation to the next (Figure VIII).

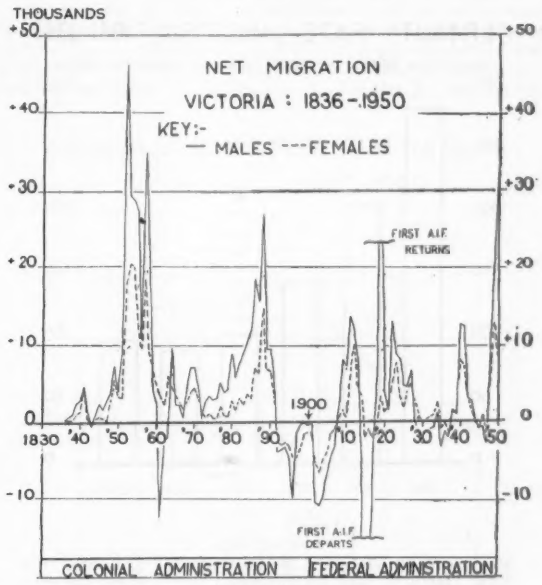

FIGURE VI.

The history of Victorian migration. The balance of inward and outward movement of population is plotted annually for males and females separately. Since the movements of the first Australian Imperial Force (but not the second Australian Imperial Force) were treated as migratory by the Commonwealth Statistician, the swing of the "male" curve exhibits a fictitious amplitude, which is not shown to its full extent on the chart.

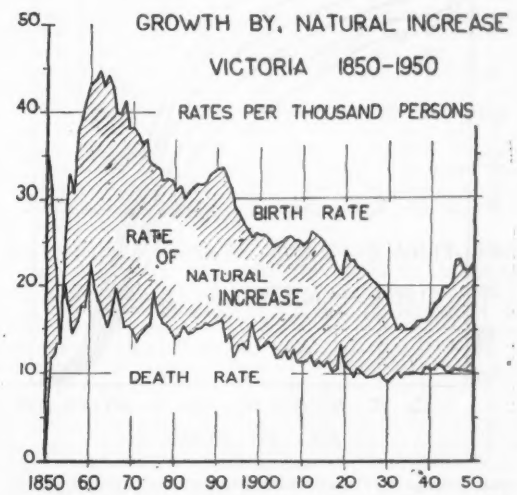

FIGURE VII.

The history of Victoria's natural increase. Note that prior to 1860 the figures are somewhat unreliable, as compulsory registration of births did not commence until 1853. The wide fluctuations of the death rate in earlier years are due to epidemics. (For further details see text.)

It will be observed that we have used the word "fertility" not in any biological sense, but as referring to a statistical index of family size. When fertility in the

biological sense is meant, other expressions, such as "fecundity" or "reproductive capacity" may be used. In recent decades fertility has fallen greatly in many countries, including Great Britain, the United States of America, Australia and New Zealand. At the same time there is ample evidence to show that human fecundity or reproductive capacity has not diminished in any of the countries mentioned. The only conclusion is that the fall in the size of the family over the last seventy years is due to an extension of deliberate family limitation.

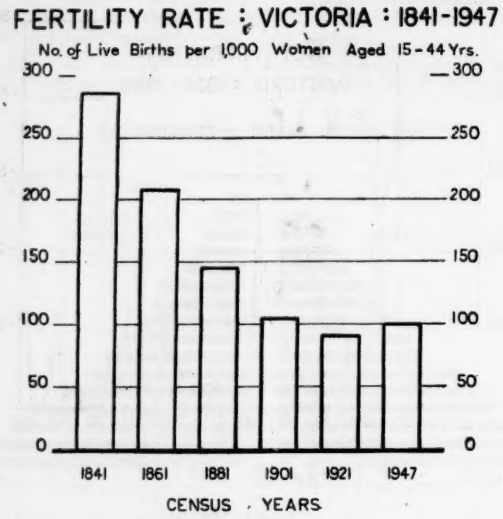

FIGURE VIII.

The trend of Victorian fertility levels. Note that the term "fertility" has no biological significance; its conventional use in vital statistics refers to family size. The fertility rate is presented in the chart as at alternate census years. (For further details see text.)

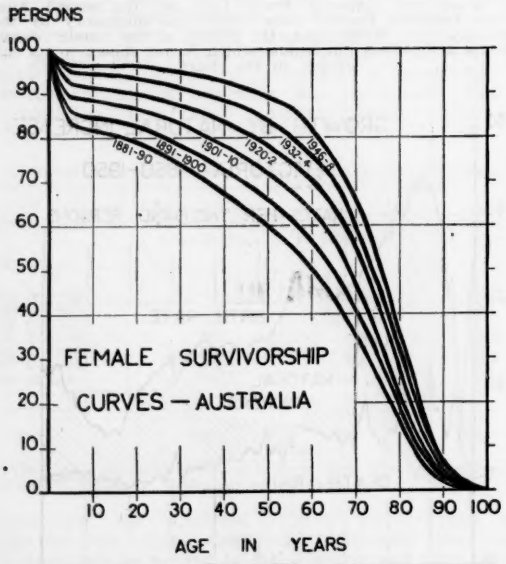

FIGURE IX.

The average life span of Australian females at various dates. Note that the first three curves are based on average mortality rates for decennial periods; the last three curves are based on the averages for triennial periods. (For actuarial computations see text.)

This fall in family size has come to stay and is a serious matter for thinly populated Australia in an over-populated world. In "Population and Policy" Professor P. H. Karmel considers the concept of an optimum population and states that from an economic point of view "the optimum population is not the maximum population that a country can accommodate". Even so, one cannot help feeling that the Right Honourable R. G. Casey is right when he warns us to "double or quit". It will be generally agreed that Australian babies are the best immigrants, but failing them we shall have to rely on overseas migrants to "speed up" the doubling process.

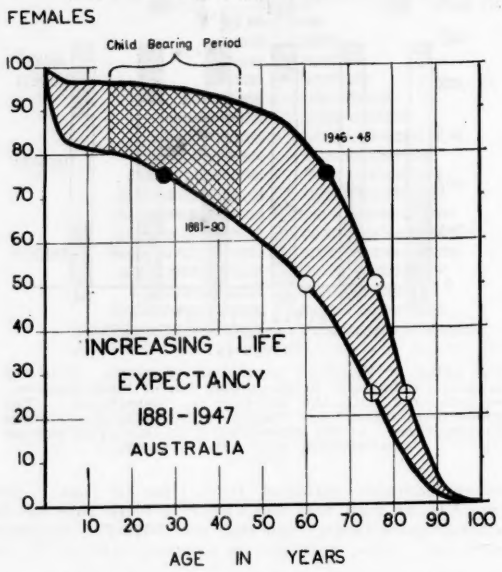

FIGURE X.

The longevity of Australian females: a comparison of life expectancy in the 1880's with that of the 1940's. Note the changing mortality gradient shown as follows. Black disk: The age at which survivors are reduced by one-quarter—1881-1890, twenty-seven years; 1946-1948, sixty-five years. Difference, 38 years. White disk: The age at which survivors are reduced by one-half—1881-1890, sixty years; 1946-1948, seventy-seven years. Difference, seventeen years. Disk with cross: The age at which survivors are reduced by three-quarters—1881-1890, seventy-four years; 1946-1948, eighty-two years. Difference, eight years. Note also the changing proportion of female infants growing up to potential motherhood, as follows. (*a*) The proportion reaching the age of fifteen years: 1881-1890, 80%; 1946-1948, 96%. (*b*) The proportion reaching the age of forty-five years: 1881-1890, 64%; 1946-1948, 91%. (*c*) The proportion of those reaching the age of fifteen years to live right through child-bearing age (that is, fifteen to forty-five years): 1881-1890, 79%; 1946-1948, 95%.

Life Expectancy: Yesterday and Today.

A striking feature of demographic history during the last hundred years has been the great decline in mortality rates for civilized countries. As a corollary to this regression in the death risk there has been a prolongation of life expectancy for the average individual. The fact that nowadays more people live longer is of importance not only to the individual but also to life insurance companies, whose business is dependent upon the calculated risks of dying or upon what amounts to the same thing—the calculated chances of survival from one year of life to the next. The progress of life insurance business has resulted in the actuarial computation of life tables, which need revision from time to time in order to make allowances for changes in mortality rates and changes in the age composition of the population. Since Australian life tables are used to assure Victorian lives, we may assume that Australian survivorship curves, as in Figure IX, are

truly representative of Victorian conditions. In this chart the six curves illustrate the pattern of female survivorship or what is the same thing—the mortality gradient in each of six successive periods in our history. The area under each curve is equivalent to the total number of years that would have been lived by a group of 100 females, if subjected to the prevailing mortality rates from birth to age 100 years (at which age all members

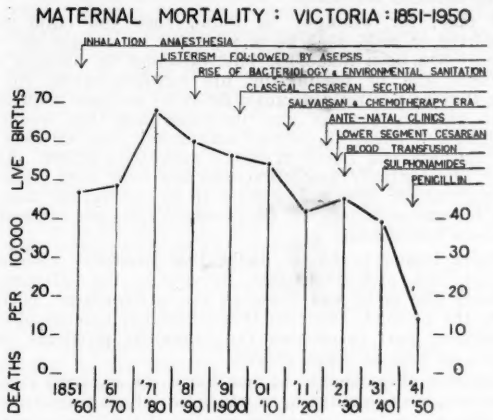

FIGURE XI.

The history of maternal mortality in Victoria. Note that the average mortality rates for successive decennial periods are shown from 1851 to 1950. The overhead arrows denote the approximate dates at which the several therapeutic procedures became firmly established in Victoria.

of the group are presumed to be dead). In the actual experiences illustrated it is found that female life expectancy at birth (that is, the average life span) has increased with the years as under:

1881 to 1890	51·10 years
1891 to 1900	54·99 years
1901 to 1910	59·01 years
1920 to 1923	63·31 years
1932 to 1934	67·14 years
1946 to 1948	70·63 years

In Figure X are plotted the first and last curves of the preceding series, showing that life expectancy at birth for Australian females has been advanced from 51·10 years in 1885 to 70·63 in 1947—a gain of almost twenty years in the life span of the average female during the last sixty odd years. Incidentally the shaded geometrical figure between the two curves covers an area equivalent to nearly 2000 years. Other important readings from the chart are given in the legend attached to Figure X.

Midwifery in the Making of Victoria.

Thus far we have made a brief study of the fundamental role of motherhood in the making of Victoria. We now come to the central theme of all R. H. Fetherston Memorial Lectures—the price paid in maternal mortality and morbidity for populating the Antipodes, and the extent to which medicine (including surgery, gynæcology and obstetrics) is safeguarding our child-bearing women. The first R. H. Fetherston lecture was given in 1945 by the late Dr. Arthur M. Wilson, who chose for his subject "The Prevention of Maternal Mortality in Child-birth"; for the second lecture (1948) Dr. W. Ivon Hayes gave us an up-to-date analysis of "Fœtal Losses in Childbirth". Both lectures were predominantly clinical—the principles, techniques and minutiæ of sound modern midwifery. In commenting upon these matters my distinguished predecessors pointed to the remarkable progress of clinical obstetrics in recent years. No longer need we write, as did Professor R. Marshall Allan in 1928, that "our attitude must be one of profound dissatisfaction with the present losses and with the standards deemed sufficient heretofore"; rather should we record that midwifery, like other branches of medicine, has entered on its golden age.

The quality of Victorian midwifery and its effect upon the public health may be demonstrated, in broad general outline, by a progressive record of the movements of two demographic indices—namely, the maternal mortality rate and the neonatal mortality rate.[1] Figure XI depicts the

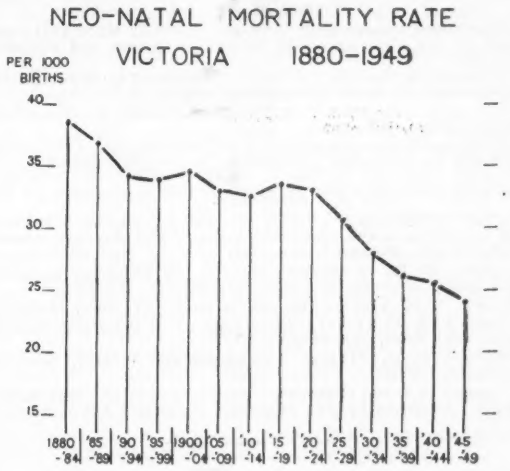

FIGURE XII.

The history of neonatal mortality in Victoria. Note that the average mortality rates for successive quinquennial periods are shown from 1880 to 1949.

progress of a century by the plotting of average maternal mortality for successive decennial periods. In the same diagram we have charted contemporaneous expansions of the therapeutic "umbrella" with which medical science has protected puerperal women. Inspection of the chart reveals that over the last seventy years there has been a downward trend in maternal mortality, the slope of which has become particularly steep during the last thirty years. Is it too much to claim that the drop from a peak of 67 per 10,000 in the 1870's to an "all-time low" of 7·7 per 10,000 in 1949 (not shown on chart) is directly related to the therapeutic advances of the period? The same downward trend is noticeable in the rate of neonatal mortality for Victoria, and is shown in Figure XII, the fall being steepest during the last thirty years.

The history of obstetrics in the State of Victoria is virtually the history of the Women's Hospital, Melbourne, founded in 1856. This hospital has been the training school for almost all graduates of the University of Melbourne as well as for hundreds of certificated nurses. With the foundation of the chair of obstetrics in the university (1929) the Melbourne school attained adult stature and an individuality of its own. Associated with these developments we find the names of many men of genius and enterprise, amongst them being that of R. H. Fetherston. His life span almost exactly occupied the middle seventy-nine years of the century that has passed—a wide bridge of wisdom welding the old practitioners with the new.

Acknowledgements.

I gratefully acknowledge the valuable assistance and cooperation of Miss C. McCall, B.Com., in the preparation of this address. It is not too much to say that without her help the work could hardly have been accomplished. The Victorian Government Statist (Mr. O. Gawler, F.I.A.)

[1] The maternal mortality rate is the number of puerperal deaths registered during the year per 10,000 live births registered in the same year. The neonatal mortality rate is the number of deaths of infants aged under one month per 1000 live births registered in the same year.

has very kindly given access to recent material not yet available in official publications. Needless to say, the work of earlier statists, particularly W. H. Archer and Henry H. Hayter, has proved indispensable. I am indebted to Professor F. A. E. Crew, of Edinburgh, for his book on "Measurements of the Public Health" and to the report of the Royal Commission on Population, Great Britain, 1948.

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PÆDIATRIC PSYCHIATRY: ITS SCOPE AND LIMITATIONS.[1]

By JOHN F. WILLIAMS, M.D., M.R.C.P., D.P.M. (London), F.R.A.C.P.,

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To quote John Hunter, "all definitions are damnable", but it seems desirable to try to define the subject of this paper, and this may perhaps be done with the greatest ease by saying that pædiatric psychiatry is the study of the difficulties of adjustment of the child to his social environment.

These difficulties may be shown in various ways and be brought about by a variety of causes, which seldom act in isolation.

Symptoms of faulty adjustment are to be found in the behaviour of the child and may be rather crudely divided into the following groups: (i) Disorders of habit, for example, enuresis, encopresis, faulty feeding habits, food fads, vomiting, tics, nail biting, thumb sucking, masturbation. (ii) Disorders of conduct, for example, temper tantrums, fits of crying, truancy, delinquency, destructiveness, disobedience, cruelty. (iii) Disorders of personality, for example, moodiness, lack of self-confidence, fearfulness, jealousy, day-dreaming. (iv) Disorders of speech, for example, lisping, dyslalia, stammering, backwardness, mutism. (v) General retardation of development.

These are seldom found in isolation, and although one of them may be the presenting symptom, even a hurried history will generally reveal the existence of others.

They may be mainly due to organic disabilities, for example, general ill health, faulty nutrition, sensory deprivation, glandular defect, cerebral defect, or possibly other unknown constitutional diatheses.

They may be mainly due to faulty intellectual or emotional development resulting from difficulties in the social environment in the past or present, for example, a rejecting or over-anxious mother, a drunken father or a foolish aunt or teacher. The harmful influence of these may be partly at least due to the period of development reached by the child and the way in which they have been incorporated into the personality.

Generally, however, it will be found that more than one of these ætiological factors combine to produce difficulties of adjustment sufficient to cause the symptoms which demand attention.

It may, for example, be found that the child with spasticity so mild that he is regarded as clumsy or "not trying" has been made the butt of abuse by parents and teachers and of teasing by his contemporaries for so long that he has retired into a defeatist attitude with well-built barriers against any intrusion into his world of phantasy. These of course strengthen the attitude of hopelessness and rejection of the ambitious father. Similarly, the partially deaf child who has long been regarded as inattentive, dull and lacking in concentration, does in fact become so unless his needs and defects are recognized in home and school.

There seems to be no doubt that excessive emotional tension can, and often does, develop in the relationship between the child and those in the environment, particularly the parents, and that this emotional tension plays a prominent part in causing the behaviour problems listed above, as well as many others.

Amongst these should be mentioned the so-called visceral neuroses, such as asthma, in which an inborn constitutional predisposition is activated by emotional tension to produce the attacks, and in which relief of such tension leads to great improvement or cessation of the attacks.

It will be seen that the field of pædiatric psychiatry is indeed very widespread, and in practice most pædiatricians feel qualified to give advice in management and treatment of these problems. So, of course, do many others, from the kind or sadistic neighbour or maiden aunt, the teacher in day or Sunday schools, the local clergyman and the psychologist.

Over twenty years of experience in the psychiatric clinic of the Children's Hospital, as well as in private practice, has, however, shown that often these disorders do not respond to the advice or treatment of any of these authorities, though such treatments range from threats of hell fire to psychoanalysis. Neither of course do these problems always respond to the united efforts of the team of a psychiatric clinic—the social worker, play therapist, speech therapist, audiometrist, psychologist, remedial teacher and psychiatrist.

These disorders are signs of a faulty adjustment that may be of great importance to the present and future welfare of the individual and the community, but much ignorance exists as to their ætiology, treatment and prognosis.

Child Development.

Observation has led to some interesting generalizations on the development of behaviour—for example, the life of the child at the breast, with the signs of pleasure, affection and anger, the development of social interests at about the fifth month, the way in which skilled movements are differentiated from the mass activity of the infant, and the ways in which the intelligence and emotional life develop. The frequency with which temporary behaviour problems develop in apparently normal children has been stressed—for example, tantrums and fits of obstinacy, thumb sucking, difficulties in training of bowel and bladder, night terrors, jealousy, rivalry and aggression.

An interesting Australian study is that of Miss Edna Hill, dealing with the behaviour problems of children attending the Lady Gowrie Centre in Brisbane, and showing, for example, significant correlations between thumb sucking and general ill health, and between enuresis, aggressiveness and nail biting.

There appears to be no doubt that the process of growing up from the dependent infant to the relatively independent adolescent will entail considerable conflict with those

[1] Read at a meeting of the Melbourne Pædiatric Society on March 14, 1951.

in the environment and particularly the parents, and that if no symptoms of such conflict occur this is a valid reason for disquiet. These should not, however, be so great or persistent that the resulting personality of the adult makes a useful and happy adjustment impossible, and there seems to be no doubt that much of the invalidity and unhappiness of the community can be traced back to personality trends that have been present in early years.

One difficult decision that must be made in this work is that of judging how serious are the presenting symptoms, whether they are likely to be transient signs of what is essentially a healthy development of a normal child who is misunderstood by the parents, or whether they are to be regarded as signs of a personality defect due to faulty management or faulty constitutional make-up which will predispose him to serious difficulties in the future. Upon this decision, which must be made as soon as possible, a great deal will depend. In either case an attempt must be made to give some better understanding of the situation to the parents, and this may require considerable time and skill; but the handling of the child will vary widely according to the decision, and this can be made only after careful investigation of the problems.

In recent years these problems have been rousing public interest in all civilized communities, and much research has been undertaken with some interesting, though at times conflicting, results.

The Rockefeller Foundation authorities have been so impressed by the importance of these problems that they are devoting quite an appreciable proportion of their funds to aid research and teaching along these lines. As a token of their interest, I was last year given a travelling grant to enable me to spend some weeks in the United States of America, investigating the training in child psychiatry given in medical schools, and a very interesting time it was, for which I wish to express my deep gratitude.

There is no doubt that in the great majority of the better known schools in that country psychiatry has assumed the position of a major subject, and considerable emphasis has been placed on the psychiatry of childhood, though there, as in Great Britain and Australia, the pædiatrician has, it seems, proved even more conservative than the physician dealing with adult disorders when asked to accept some of the findings of those particularly interested in this subject.

Psychoanalysis.

There has been much emphasis on early emotional development in paving the way for psychiatric troubles in later life, and the effects of frustration at the breast, rigid toilet training, and maternal rejection and over-anxiety have been stressed as causes of emotional disorders in childhood and adult life. It has been claimed that these are to be regarded as affecting the instinctual life of the infant and having repercussions in the deep unconscious of the child and adult, which lead not only to neurosis and character disorders, but to psychosis. The validity of these claims is supported by the results of analysis of the unconscious minds of adults, as well as by the interpretation of the play and behaviour of children.

There has, however, been a tendency to interpret these observations in accord with hypotheses which often seem very far-fetched and provide some justification for the conservative attitude of pædiatricians formerly mentioned.

It is, for example, rather difficult to imagine the infant at the breast, with his tears and smiles and rage, being the helpless victim of the unconscious phantasies and conflicts postulated to result from the "introjection" of the parents, that is, the process by which the infant takes within himself what seem to be extremely complicated pictures of the relationship between them and himself, with resulting guilt and fear over imagined harm to those loved and hated figures.

To quote a well known analyst (Glover, 1949):

Reconstructions of the first year and a half are extremely hypothetical and needless to say considerable differences of opinion arise between psycho-analysts as to their plausibility. Obviously it is easy to underestimate the psychic capabilities of the suckling and even easier to read into the reactions of the suckling complexities of psychic activity that are more appropriate to later infancy and childhood, or even adult life, including, it is well to remember, the adult life and reactions of the observer.

It is also difficult to imagine that such feelings are perpetuated as character and personality trends in later life and that these form the basis of psychoses which often appear to occur in adult life with little or no previous warning.

Psychoanalytical views are undoubtedly the driving force behind much of the psychiatric work in medical schools in the United States of America and Great Britain, and the acceptance of Freudian and other analytical doctrines is so widespread that it is almost heretical to doubt their validity, and quite unorthodox to claim to be a psychiatrist without having been through a process of analysis over a period of at least two to three years.

It is in fact quite unusual in the United States of America for anyone to be appointed to a responsible academic psychiatric position unless he has been analysed, and an analysis is the first step of the ambitious graduate.

This is not the time or place to consider fully the advantages and dangers attaching to this, but it has undoubtedly had an effect in determining that the direction of teaching, research and treatment in medical schools should be along the lines of intensive analytical investigation of a few patients rather than an attempt to deal with the large numbers of those presenting difficulties on a possibly less psychopathological basis, who are often rather inadequately dealt with in other more crowded clinics.

Whether this is to prove justified by the results is still open to the future to decide, but it seems to me rather unfortunate for the student, pædiatrician and psychiatrist, as well as for many of those needing attention.

One interesting result has been that in some schools it has been regarded as dangerous to the pædiatrician and the child to embark on treatment unless the pædiatrician has been through the rigours of a training analysis, owing to the emotional atmosphere created during a lengthy analytical treatment.

There is some difference of opinion on whether the pædiatric psychiatrist should be primarily a pædiatrician or a psychiatrist, but in either case a very lengthy period of training, including an analysis, is often regarded as essential.

The short supply of trained child psychiatrists and the length of treatment required along analytical lines has led to experiments which give much therapeutic responsibility to non-medical personnel, particularly social workers and psychologists, who have also often been analysed and who work, in medical schools, under psychiatric supervision. While this may be unavoidable, there is again the tendency to interpret all behaviour along analytical lines and to minimize the role of somatic and constitutional factors.

This widespread attitude naturally led to some introspection on the part of a non-analysed agnostic like myself, with some doubts about how much damage had been inflicted on the thousands of children who had passed through the psychiatric clinic, and it was not wholly reassuring to realize that the superficial treatment often given, if it did not do much good, probably did not do much harm.

Treatment.

The results of treatment are extremely difficult to evaluate, but the passive attitude of some child analysts, when the child is "working through" its fixations, while extremely trying to the analyst, seemed in some cases to give little help to the child even after years of attendance several times a week.

When help had been given, this seemed to be due at least as much to the direct effect of the personal attitude of the analyst on the emotional make-up of the child as to the uncovering of any specific ætiological factors in the unconscious.

This is of course well recognized, and a most important role of the psychiatrist is found in satisfying some of the emotional needs of the child and paving the way for more healthy development.

Whether this is often successfully achieved by a permissive attitude of the child analyst or by the use of rigid formulæ and doctrines in the more active interpretation of material presenting in the behaviour *à la* Melanie Klein is, however, open to doubt, and to some it seems that the end-result is often very unsatisfactory as regards the presenting syndrome and underlying personality.

It cannot be stressed too much that most of the problems presenting in child psychiatry are due to hindrances to normal development and that any treatment that removes these hindrances is well worth while. Special facilities to enable the child to work his way past these blockages may be provided in a variety of ways. Physiotherapy, occupational therapy, a holiday home or kindergarten to give temporary freedom from an impossible home situation, are not to be despised as psychotherapeutic weapons.

Play materials are widely used to enable the child in phantasy to work through emotional problems, for example, by the use of painting, modelling, toys and so forth, and some of the productions are revelations of intellectual and emotional difficulties that are very likely to remain hidden in the ordinary clinical interview with child or parent, though these can never be neglected.

Sometimes the hindrance calls for diagnostic and remedial work, for example, on speech or school subjects which have gone astray in earlier years, and sometimes an approach to the parents in an attempt to modify their attitudes seems most appropriate. The use of social groups, such as nursery schools, kindergartens, Boy Scouts and Girl Guides, and other forms of club life, is often of the greatest value.

The use of any of these or other therapeutic weapons should not be indiscriminate, but based on a careful study of the past and present state of the child, with an estimate of how his abilities have developed, what his environment has offered or denied in the satisfaction of his needs, how he has been affected by ill health and periods spent in hospital, and so forth. This study is time-consuming and often requires special techniques, for example, of the psychologist and social worker, but it is essential if there is not to be a waste of effort.

Any hindrance to healthy development, no matter how remote it may seem from the presenting problem, should be investigated and, if possible, modified in the belief that with a healthier development the symptoms will disappear. A sense of proportion and experience are, however, essential if we are not to aggravate rather than improve the situation by too enthusiastic a devotion to one particular hobby, whether it be infected tonsils or œdipal situations to be enucleated.

My own feeling is, of course, that, owing to their education and experience, this sense of proportion should be found more often in the medical profession than in the ranks of psychologists, educationists or lay therapists of any kind, but it is unfortunately true that this is not by any means always the case, for there is little psychiatric knowledge and information on the norms of intellectual or emotional development being given in the education of our medical students and resident medical officers.

This ignorance is often covered up by what is regarded as a common-sense approach to the problems, but this approach unfortunately is often based on prejudice and bias resulting from personal problems and defects. These personal problems and resulting bias are in my biased opinion as often present in the analysed as in the non-analysed.

There is no doubt that much harm can be done by treatment and advice based on bias, prejudice and ignorance, and unfortunately at times all of us are guilty in these regards. Much ignorance still exists about child development and the management of problems of behaviour, and there is room for research from many aspects; but there seems to be a fairly firm basis of fact which should be incorporated in the pædiatric training of all students and should be common knowledge of all pædiatricians and general practitioners.

As already stated, the scope of pædiatric psychiatry is very wide and very important for the future of the individual and the community. Workers in this field are many and their qualifications vary, but it should be one task of the pædiatrician to be able to assume some responsibility in this field, and this cannot be undertaken without far more knowledge, more widely spread, than is the case at present.

Limitations.

The limitations in pædiatric psychiatry are in many respects those of pædiatrics—for example, the fact that many of our patients are limited in ability or stability as a result of germinal endowment or embryonic, natal or postnatal injury, and our ignorance about the prophylaxis of these limitations.

We have, however, our own peculiar limitations. Some of our diagnostic tests lack the precision of the pathological laboratory and our diagnosis must often be made on evidence given by our own subjective bias—for example, is a screaming child suffering from fear, anger or frustration? Our therapy again is often limited by social factors, such as poverty, poor facilities for special education, lack of play materials and the ever-present difficulties of modifying the emotions and beliefs of parents and others in contact with the child, and yet these social factors may make all the difference between success and failure in our treatment.

Seldom are we able to trust entirely to our modifications of the child's own attitude and behaviour by medicinal means or psychotherapy, and this modification is always a difficult matter; how difficult is often not realized by pædiatricians. Our therapeutic weapons are often lacking in precision, and often we have to admit to failure to remove presenting symptoms, though we feel that the total personality is altered and that, given time, which here as elsewhere may be a great healer, the chances of recovery have been enhanced by our efforts. Sometimes even this consolation is denied us, and the most intense and lengthy psychotherapy, as well as the most superficial advice, at times seems to do harm, and time does not always heal.

The limitations and difficulties are great, but so are the opportunities for research. In my opinion much pædiatric psychiatry is based on faulty and biased preconceptions, and at times harm results from this; but on the whole it seems that the balance rests in favour of benefit having been given and that advances in understanding in the future will help to lighten the way to a better and healthier childhood and youth and maturity in our community.

To give this added understanding will, however, need much long-continued effort and interest in these problems.

May I close by asking a few of many questions, the answers to which I would dearly like to know, as they have a definite bearing on much recent teaching on child development?

1. What harm has been done to generations of children in hospital by stopping visits of parents and others? If none, why is there such a move to allow parents into the wards of many hospitals in the United States of America and Great Britain?

2. What harm has been done by the separation of mother and infant in maternity hospitals? If none, why the growth of "rooming-in" projects?

3. What differences are to be found in breast-fed and bottle-fed infants in later life, or in those breast-fed for shorter and longer periods or those abruptly weaned?

4. At what age, if ever, should an infant be allowed to "cry it out"?

5. Is a regular schedule of feeding in the first few months really calculated to give more self-control and strength of character, or does it create loss of confidence and greater demands from the parent, or neither?

6. Does rigid toilet training ever succeed without causing some loss of emotional warmth and insecurity or laying the foundation of an obsessional neurosis?

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Glover, Edward (1949), "Psycho-analysis", page 97.

COLOSTOMY CLOSURE.

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Sydney.

BECAUSE of the desire to avoid a colostomy, resection and immediate anastomosis of colonic neoplasms have gained in popularity since the advent of the relatively insoluble sulphonamides, and this has been followed in some clinics by a return to a somewhat similar intraperitoneal operation for colostomy closure. However, for the latter the majority of surgeons still prefer the so-called extraperitoneal procedure after the formation of a spur and its subsequent crushing.

The mortality rate for the operation of colostomy is high if the figures include operations performed on patients in the later stages of intestinal obstruction; but such an overall mortality rate should not affect the decision to use or not to use a colostomy as the first stage in the resection of a carcinoma of the colon or rectum. Rather, such a decision should depend on other factors, such as the presence of obstruction, fixation or infection in relation to the tumour.

It is likely that the desire to avoid a colostomy is partly related to past difficulties experienced in colostomy closure. Lockhart-Mummery (1923) and Grey Turner (1943) both acknowledge that the closing of a colostomy is not a very easy matter, and they, like many others, stress the need for adequate spur formation and for its complete division. Incidentally, one advantage of the Devine (1935) colostomy is that it may be easier to close. Ackland (1946) has recently reviewed a series of 87 attempted colostomy closures and showed that in only 29 did healing occur without any post-operative discharge of fæces. In that series there were three deaths, and in another case an ileo-colic fistula developed. Similar results have been reported by other writers.

Failure to close a colostomy is mainly due to incomplete crushing of the spur, to obstruction at or distal to the site of the colostomy, or to inattention to the details of the closure. More than one application of the clamp may be required to crush the spur completely. Prior to attempting to close the colostomy the presence of any degree of obstruction in the bowel distal to the colostomy should be determined by sigmoidoscopic and barium enema examination whenever there has been a lesion in this portion of the bowel.

The technique of extraperitoneal colostomy closure will not be discussed here, for it has been fully described by Ackland (1946). The need for attention to the details of preparation of the bowel, of adequate freeing of the portion of the bowel involved, of gentleness in handling the bowel, of suturing the bowel without tension, of inturning the mucosal edges or repairing the muscles over the bowel, and of obtaining complete hæmostasis must be stressed if one is to obtain freedom from fæcal fistulæ after such attempted closure. It is also advisable to delay the closure for at least two weeks after the spur has been completely crushed.

In order to reduce the incidence of subcutaneous abscesses and fæcal fistulæ after attempted closure of colostomies, Pemberton and Black (1943) recommended delayed closure of the abdominal wall. This, however, is unnecessary.

While an attempted extraperitoneal colostomy closure may be quite successful in the absence of a sutured spur which has previously been crushed, such a spur facilitates the closure and is to be preferred whenever possible. If an enterotome is to be applied without there being a sutured spur, a loop of small bowel or blood vessels may easily intrude between the limbs of the colostomy and be crushed. It must also be remembered that the use of an enterotome to pull the limbs of the colostomy together may result in thinning and even in perforation of the bowel by the tips of the blades. Even if an adequate spur has been formed by suturing, it is conceivable that some structure on the posterior abdominal wall may be included in the tips of the clamp. The tips of the blades should therefore not be applied to such a depth that they are no longer movable.

Unfortunately, the crushing of the colostomy spur is usually associated with abdominal discomfort of greater or less degree. Some of the discomfort during the crushing of a spur may be due to the weight or top-heaviness of the clamp, which drags on the mesentery, and it may therefore be reduced by the use of a suitable instrument. On the other hand, this discomfort may be avoided by dividing and suturing the spur at the time of the closure, as suggested by Pauchet; but this may present some technical difficulties. It would appear, however, that he (1925) had previously been using a long straight artery forceps for crushing the spur.

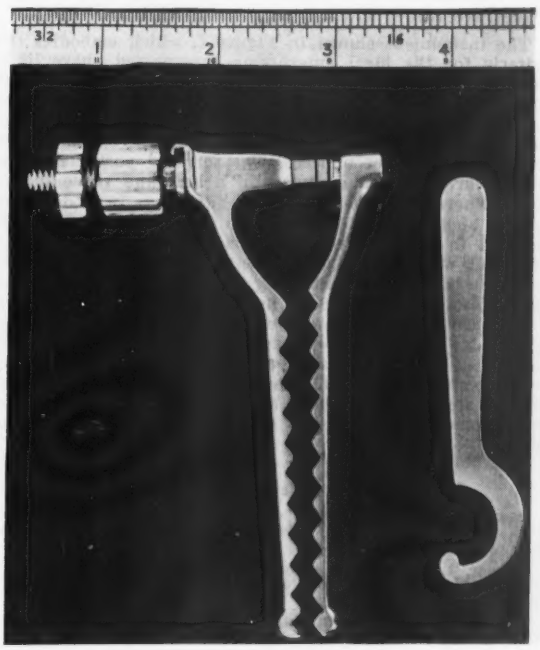

FIGURE I.
The scale is in inches.

The ideal enterotome (or enterotribe) must crush the spur without cutting through too quickly, it should not slip off, it should be light in weight, it should project very little above the skin, and it should be easy to apply and clean. To prevent its slipping off, the instrument should be made so that the tips of the blades come in contact first, the blades should be fashioned so that the serrations interdigitate, and, if desired, it should be possible to leave uncrushed a small bridge of mucosa at the upper end of the spur, to be divided after the remainder of the spur has been crushed. It should also be possible to use it when a bridge of skin has been left between the colostomy openings as devised by Devine. The instrument should be stainless and it should be sufficiently rigid so that the blades do not go out of alignment when pressure is applied. Because of variation in the height of colostomy spurs at least two lengths of the blades are advisable. The instrument should be as simple as possible. For instance, Berger's instrument (1942) contained a fulcrum screw to maintain the tips of the blades in contact; but this is unnecessary with an instrument of stainless steel, for it may be made sufficiently rigid and yet the tips may be

allowed to close first. Cope's enterotome (1940), with its double tube, is difficult to introduce and offers no real advantage. If desired, it should be possible to introduce the blades separately and then to fix them together.

Some of the earlier instruments, for example, Mikulicz's, were tightened by means of stretched rubber tubing; but present-day instruments are tightened with nuts. These nuts should be easily handled even when soiled.

The scissor action of many enterotomes, such as Dupuytren's (1832), is unsound and undesirable, for they tend to slip off; moreover, with them it is difficult to crush the bottom of the spur completely (Phillips, 1950). The hinged right-angled clamp of Kinsella (1947) has parallel blades and the need for supporting the handles is obviated. With this instrument the bottom of the spur may be crushed, but the serrations to hold it in place are small. With the DeBakey and Ochsner (1939) modification of the Devine clamp (1935) the handles still project three or four centimetres above the skin surface, and even then the blades are rather short.

The instrument shown in Figure I, which embodies the criteria for the ideal enterotome enumerated above, is a modification of that of Lloyd-Davies and Bond. It is made by A. L. Hawkins, Limited, of New Cavendish Street, London, W.1, to whom my sincere thanks are due. The metal used is stainless steel and the weight of the longer instrument is three ounces. The serrated portions of the blades have been made two and a half and three inches long. There would perhaps be an advantage in also having longer blades available. The top of the threaded bar is marked to indicate when the blades are touching at the tips and when they are completely closed. The lock-nut prevents the blades from being forced apart. The spanner is sometimes of use for the final tightening of the screws. In the early stages the screw should be tightened slowly. The ridge on the upper edge of the bar, under which portion of the screw fits, gives sufficient control and facilitates cleaning. With this instrument in place the patient can be ambulatory without discomfort; but whenever any enterotome is applied the patient is better confined to bed.

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AN INEXPENSIVE AND EFFICIENT TRANSFUSION SET.

By J. C. A. DIQUE, M.B., B.S.,

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THE advent of the 500-millilitre bottle for the storage of blood and serum has created problems in the intravenous administration of fluids. Prior to the introduction of this bottle, blood, serum and all crystalloids were supplied in 1200-millilitre "Soluvac" flasks. Civilian firms in Australia still continue to issue crystalloids for intravenous use in "Soluvac" flasks, while blood and serum are supplied by the Red Cross Blood Transfusion Service in 500-millilitre bottles. It has therefore become necessary, in order to cope with an emergency involving the intravenous administration of fluids, that the transfusion set be so designed that it will fit either bottle.

The purpose of this article is to describe the transfusion set which I have developed in this hospital and which has been in use for two years. This set fits a "Soluvac" flask or a 500-millilitre bottle. The same set is used in the Brisbane General Hospital, the Brisbane Women's Hospital and the Brisbane Children's Hospital, except that in the last-mentioned a smaller cannula is supplied with each set.

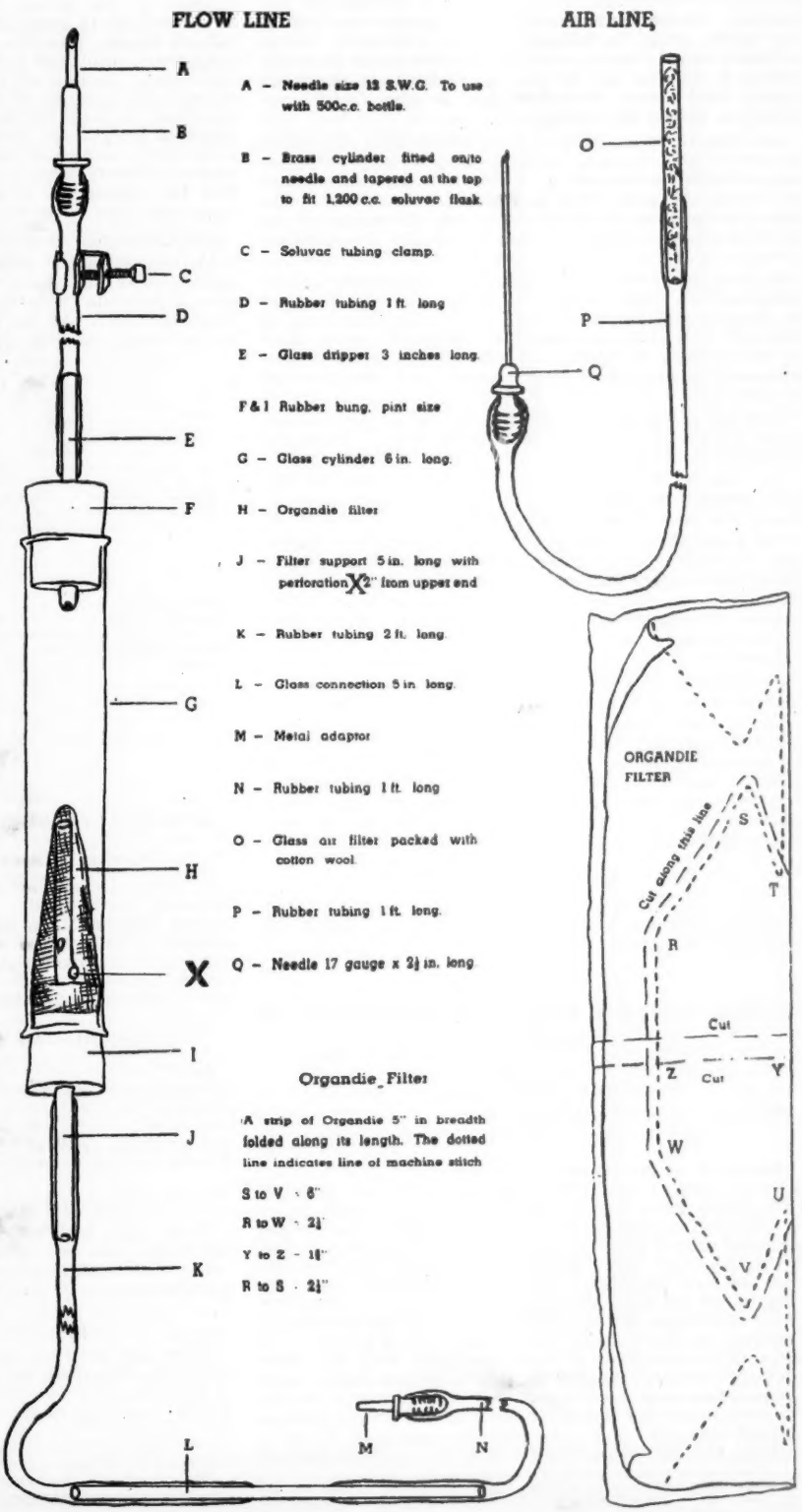
I estimate that there have been 20 of these sets in use each day over the past two years. One of the advantages of the "Soluvac" flask is that it possesses an air-line, so that air freely enters the bottle as the fluid passes out. The 500-millilitre bottle, however, has no air-line, and therefore one has to be supplied with the transfusion set. In addition to this, the mouth of the "Soluvac" flask is closed by a thick rubber diaphragm held firmly to the bottle by an aluminium collar; this diaphragm has one perforation into which the glass tube which acts as an air-line is fitted, and another large perforation into which the upper end of the transfusion set is fitted. On the other hand, the mouth of the 500-millilitre bottle is closed by a thinner rubber diaphragm held down by an aluminium cap with two perforations, and air enters and fluid leaves the bottle by each of two needles which are used to puncture the diaphragm through these perforations.

In order, therefore, that existing stocks of both types of bottles continue to be used, the transfusion set should fit both bottles, so that blood or serum supplied by the Red Cross, or crystalloids supplied by civilian firms or made in hospitals, may be administered with the same set.

A transfusion set should have the following properties. (i) A simple design, composed of straight tubes, so that cleaning is facilitated. (ii) No crevice where dirt may lodge. (iii) A minimum of components, composed as far as possible of glass, so that the contents can easily be observed and the degree of cleanliness noticed. (iv) An air-line and a flow-line. The air-line should have a cotton-wool filter so that particles and bacteria may not be sucked into the bottle as the fluid passes out. This is important, because one pint of air is bubbled through every pint of blood or serum administered. The flow-line should have a wide-bore needle at its upper end to facilitate the rapid escape of all types of fluid from the bottle, including 35% glucose solution and packed red cells. (v) Suitability to both types of bottles now in use. (vi) A "dripper", so that the rate of flow can be observed through a glass chamber. (vii) A drip regulator to control the rate of flow. (viii) A disposable filter, or one that can be easily cleaned. (ix) At the lower (patient's) end of the flow-line, in addition to an intravenous needle and a cannula, an adapter rubber to record needle fitting for the use of practitioners not skilled in the usual methods of venipuncture. (x) Cheap and easily obtainable components, so that replacements are not held up, and a large number of sets can be rapidly made available in time of war or during major civilian disasters.

The accompanying diagram (Figure I) illustrates all the components of the transfusion set.

The brass cylinder *B*, through which the needle *A* passes, and to which it is soldered, is tapered to fit a "Soluvac" flask and is 6·3 millimetres in external diameter at its upper end and 6·4 millimetres at its base. The fitting is done in the hospital instrument and splint department. The components *E*, *J*, *L* and *O* are made from glass tubing 7·4 to 7·9 millimetres in external bore. The tubing is cut and the end held in a flame, until slightly melted, so that there are no rough edges. During the melting process the lower ends of *E* and *O* are allowed to close more than the upper ends, so that cotton wool will not fall out of *O* into the rubber tube, and *E* has a convenient dripper end. *E* and *O* are interchangeable. The filter support *J* has two lateral perforations, one and a half and two inches respectively from its upper end, which is closed. A pipe-cleaner can easily pass up *E*, *J*, *L* and *O*. When the set is assembled the perforation *X* should lie just above the surface of the bung *I*. *F* and *I* are pint-sized rubber bungs universal in Australia. They are about 27·5 millimetres in length, with diameters of 28 and 23 millimetres at the ends. Each has a single hole bored through it from end to end so that *E* and *J* sit firmly. This hole can conveniently be bored with a "Soluvac metal adapter bottle to rubber tubing", which has been sharpened at one end so that it has a good cutting edge. The six-inch glass cylinder *G* has an internal diameter of about 25 to 26 millimetres and fits tightly onto the rubber bungs *F* and *I*. The ends of *G* are lipped but not flanged; if the ends are flanged there is a tendency for the rubber bung to slip out during autoclaving. The filter *H* is composed of finest organdie—material from nurses' discarded veils is suitable. The organdie is cut into long strips, which are then folded along their lengths and stitched as in the diagram, which shows a small part of a strip; the dotted line represents the line of stitching. The approximate dimensions of the filter are shown in the diagram. Each stitched length of organdie is then cut up to form a number of filters such as *R*, *S*, *T*, *Y*, *Z*. When the set is assembled, the organdie filter is not tied onto the rubber bung *I*, but is held in place by pressure between *I* and *G*. Care must be taken that no portion of the organdie projects below the glass cylinder *G*, otherwise the set will leak at this point.



The filter is discarded when the set is dismantled for cleaning. The air inlet needle *Q* (17 gauge, two and a half inches long) is adequate for all purposes. It is preferable to a 12 gauge, seven-inch needle as an air inlet, because it delivers air as fast as required, is easier to change from bottle to bottle, and is less easily contaminated during the change-over.

Occasionally when a drip is going slowly fluid collects in the rubber tube *P*. This does not stop a "drip", but the excess should be removed by quickening the rate of flow just before the next bottle is changed. In this way the fluid is swept from the rubber tube into the bottle by the inflow of air, and there is no spillage during the changing of bottles.

When the set is used the chamber *G* is first held almost horizontal, but with the filter slightly above the level of the dripper, and fluid is allowed to flow in until there is sufficient to half-fill the chamber. The cylinder is then allowed to hang vertically. In this way the filter is kept submerged during use and air cannot enter the flow-line through *X*.

Each set is issued with a cannula and an intravenous needle (gauge 17, one and a half inches long). These are not shown in the diagram.

The cost of the entire set works out at about £1 10s. This includes the cost of the cannula, which is approximately 15s., and of the other metal parts.

The glass parts are obtainable from the Carlton Instrument Company, Bowen Street, Brisbane, but can be made easily by any glass-blower. The rubber bungs are supplied by the hospital dispensary, and the holes are bored in the hospital instrument and splint department. Metal parts can be obtained from any company which supplies surgical instruments.

The extreme simplicity of construction, ease of cleaning, low cost and ease of production are worthy of notice.

The Brisbane Hospital supplied three dozen complete sterile transfusion sets for treatment of the victims of the Mount Lamington disaster immediately a request was received, and a further three dozen twelve hours later. Hospital stocks were replaced during the forty-eight hours following the issue of these sets. This would not have been possible with any other type of transfusion set.

Acknowledgement.

I am indebted to Dr. A. D. D. Pye, General Superintendent, Brisbane and South Coast Hospitals Board, for permission to publish this article.

VAGINAL DELIVERY AFTER PREVIOUS CÆSAREAN SECTION.[1]

By W. IVON HAYES,
Melbourne.

THE truth of the time-honoured aphorism "once a cæsar always a cæsar" has recently been doubted and assailed. In the days when Eardley Holland, in his classical paper on Cæsarean section, showed that, among those who became pregnant after a previous section, 2% of the scars ruptured during pregnancy and a further 2% during labour, the rule was accepted implicitly; but since the almost universal adoption of the lower segment approach and the widening of the indications for operation, the risk of uterine rupture has been greatly reduced and is now said to be only one-sixth to one-sixteenth of that associated with the older classical method. Relying on this increased safety, some obstetricians now allow a patient, who has had a section for some temporary indication, to enter labour and attempt vaginal delivery, and this procedure appears to be a rational and justifiable one, for there is no doubt that an incision in the uterus can leave that organ perfectly sound and fit to participate in a future normal or even difficult labour. But this does not always occur, for many dangerously thin and insecure scars are seen at "repeat" operations. Certain criteria have therefore been used to estimate the strength of the scar and the disrupting force to which it may be subjected; but, in spite of these supposed safeguards, there will always be that element of uncertainty, and even the most enthusiastic advocates of vaginal delivery after a previous Cæsarean section insist that the patient be in a hospital where an immediate laparotomy can be performed if necessary.

But let us look at what happens in actual practice.

At the Women's Hospital, Melbourne, the classified records show that there were 47 cases of vaginal delivery after a previous Cæsarean section between July, 1940, and December, 1947. All the mothers survived, there were two sets of twins, and four children were lost.

TABLE I.

Condition.	Number of Cases.	Maternal Deaths.	Fœtal Deaths.
Vaginal delivery after section.	47	0	4 { Prematurity. Accidental hæmorrhage. *Breech* presentation. Intrauterine infection.
Uterine rupture after previous section.	5	0	6 (1 set of twins).
"Repeat" Cæsarean section.	142	3 { Eclampsia. Eclampsia and *placenta prævia*. Post-partum hæmorrhage, incompatible blood transfusion, renal failure.	4 { Maternal eclampsia at 34 weeks. Anencephaly. Premature, 36 weeks. Unknown.

An analysis revealed the following particulars.

Number of Previous Cæsarean Sections.

In every case but one there was the history of a single Cæsarean section only. The exception was a diabetic patient who had been delivered twice through the lower segment. Hydramnios appeared during the third pregnancy and she was treated by rupture of the membranes at the thirty-sixth week. Three years later she delivered herself naturally of twins at the thirty-fourth week.

Indication for the Previous Operation.

Almost all the previous sections were performed for some transient condition (Table II). Of the seven patients who previously suffered from disproportion, two had a premature labour, three had labour induced, and two who had had a vaginal delivery before the Cæsarean section did not present signs of disproportion at the end of this pregnancy.

Type of Previous Cæsarean Section.

There were 18 classical operations, 10 lower segment operations, two extraperitoneal operations, and 17 operations of unknown type. Twenty-four operations had been performed at the Women's Hospital, Melbourne.

Previous Vaginal Delivery.

From one to seven vaginal deliveries had taken place before the Cæsarean operation in 25 cases, and from one to four since the operation in 11. In 19 cases no vaginal delivery had occurred.

Maturity.

Five patients had not reached a gestation period of thirty-six weeks at the time of delivery; 36 were at or beyond term.

[1] Read at a meeting of the Victorian members of the Royal College of Obstetricians and Gynæcologists, Melbourne, October, 1950.

Induction of Labour.

The patient already mentioned who was suffering from diabetes and hydramnios was treated by artificial rupture of the membranes; in another three cases this treatment was combined with medicinal stimulation, including the use of pituitrin; and five other patients were given medicinal stimulation with pituitrin, three being at term, one at 38 weeks, and one at 30 weeks with premature rupture of the membranes.

Twins.

Two sets of twins were born, one at term (delivery being complicated by hydramnios), the other at thirty-four weeks. The former case provided the one near-catastrophe in the series.

TABLE II.
Indication for Previous Cæsarean Section.

Condition.	Number of Cases.	Condition.	Number of Cases.
Placenta prævia	17	Diabetes	12
Preeclampsia	10	Recent pelvic operation ..	2
Disproportion	7	Eclampsia	1
Primipara, breech presentation	3	Ante-partum hæmorrhage	1
Obstructed labour (two cases of ovarian cyst)	3	Previous myomectomy ..	1

This patient had had one normal vaginal delivery since the single Cæsarean section, and after giving birth to one living child presenting by the vertex and weighing four pounds fourteen ounces and one stillborn child presenting by the breech and weighing eight pounds five ounces, she showed signs of profound shock and was treated by subtotal hysterectomy, although no rupture was found at operation, but only a greatly distended lower segment.

Discussion.

So far it appears that vaginal delivery after a previous Cæsarean section is safe for the mother and moderately safe for the child; but during the period under review, in five cases a Cæsarean scar ruptured with the loss of six children (Table I). The following is a brief account of these cases.

CASE I.—The patient was in labour at thirty-eight weeks; rupture occurred during delivery of impacted shoulders; vaginal delivery was completed.

CASE II.—The patient was five days overdue; rupture occurred during early labour.

CASE III.—The patient was at term. The fœtus was presenting by the breech with extended legs. Medicinal stimulation with pituitrin was given, and rupture occurred after the third injection.

CASE IV.—The patient had had two previous Cæsarean sections; twins were present, and rupture occurred early in labour.

CASE V.—The patient was not in labour. Rupture occurred seven days before term.

If the last patient, who was not in labour, is omitted, there were 51 mothers with a Cæsarean scar who were allowed to attempt vaginal delivery. None died, but five had to be treated by immediate laparotomy, and the uncorrected fœtal mortality was nine.

A study of the "repeat" operations performed during the same period should give some idea of what may have happened had all the patients who attempted vaginal delivery been submitted to "repeat" Cæsarean section (Table I). In these "repeat" operations the maternal mortality rate was 2% and the fœtal mortality rate 2·8%, but the three maternal deaths cannot fairly be attributed to the operation itself, the death risk to the mother from an elective Cæsarean section being exceedingly small. However, these figures are too few to enable us to draw any definite conclusions from them alone; but a consideration of the clinical histories does create definite opinions.

I am more convinced than ever of the wisdom of the generally accepted dictum "once a cæsar, always a cæsar", though it is admitted that there are possible exceptions. We must strenuously oppose the growing popular opinion that a woman who has had a Cæsarean section for some temporary condition can have another child safely *per vias naturales*, because this is not true, and in a certain number of cases will lead to disaster.

The exceptional patient may be one who (i) has had a mature child vaginally; (ii) has had one Cæsarean section only for a non-lasting indication, whose scar is transverse and is wholly confined to the lower segment, and whose operation was performed by a known operator and was followed by a normal puerperium; (iii) has no pelvic contraction; (iv) has a single baby of normal size, with fixed head presenting with its vertex and the occiput in or in front of the transverse diameter, and no hydramnios, otherwise the child or children must be premature, and if twins are present, of not more than thirty-two weeks' development; (v) is delivered with forceps in order to assist and shorten the second stage of labour; (vi) must not be given any oxytocic drug until the placenta has been expelled; (vii) is attended in a hospital where operative facilities and restorative measures are immediately available.

Should such a patient present herself, the majority of obstetricians would still prefer to deliver her by "repeat" Cæsarean section rather than submit her to the hazards of vaginal delivery, in which the outcome of the labour depends on a uterine scar of unknown strength and tenacity.

Reports of Cases.

CHLOROMA.

By F. G. FENTON, F.R.C.S., and HUGH RYAN, F.R.C.S.,
Melbourne.

TUMOURS of the orbit are rare. In a recent article J. Bruce Hamilton (1947) commented on the sparsity of recorded cases in Australia. In a survey conducted by the Anti-Cancer Council of Victoria only 13 cases could be discovered, and although this obviously cannot be said to represent all the cases that have occurred, it indicates the rarity of the condition. Chloroma is a very rare tumour. Until this year only 143 cases had been recorded in the literature, and a pathologist of William Boyd's vast experience records having seen only one example. The differential diagnosis of proptosis is often difficult, and the pre-operative diagnosis of the nature of the tumour is still more difficult. For these reasons and because of the lack of response of the disease to modern therapeutic measures, it is thought worth reporting a case of chloroma.

Clinical Record.

The patient, a boy, aged two and a half years, was brought for examination on November 14, 1949. He had had no serious illnesses and was healthy for his age. Some two weeks previously he had been given the third of a course of diphtheria-pertussis injections. There was much local reaction in his buttock, and the patient was listless and irritable and suffered from insomnia. Two days later the right eye was noticed to be much more prominent than the left, with swelling of the eyeball. His family doctor, suspecting a possible allergic basis, prescribed "Benadryl" and sulphonamides, but the ocular condition got steadily worse.

Examination showed a very obvious proptosis of the right eye straight forwards. The bulbar conjunctiva was not red but very œdematous. Pupil reactions were active and equal, and the movements of both eyes were full in all directions except for a limitation of upward movement

of the right. Palpation gave the sensation of a rubbery resistance in the right orbit, but there was no evidence of pain or tenderness even on very firm backward pressure. The fundi were seen clearly after use of a mydriatic, but no signs of swelling of the disc or other abnormality were detected in either fundus. Vision appeared to be good.

The proptosis gradually increased during the next few days, and on November 17, 1949, the patient was admitted to the Victorian Eye and Ear Hospital, Melbourne, for investigation. There were no abnormalities to be found on general physical examination, the temperature was normal, and the pulse and respiration rates within normal limits.

Diagnosis.

The problem was to find the cause of unilateral proptosis of unknown origin. The physical findings suggested some pathological process pushing the eyeball straight forwards and limiting movement upwards. An infection in the orbit was considered but seemed unlikely in the absence of tenderness on pressure and of any temperature rise. Hæmorrhage and thrombosis were considered, but thought very unlikely. A primary neoplasm arising in the orbit or the deposit of new tissue from a growth elsewhere, such as from an adrenal tumour, or of leuchæmia tissue seemed more probable. The possibility of trouble in the left orbit was kept well in mind, but at this stage there was no demonstrable sign of this.

It was decided as a first step to have an X-ray examination of the skull and chest and a complete blood examination. The X-ray examination findings were negative, but the blood tests provided very interesting information. The total red blood cell count was 4,030,000 per cubic millimetre and the white blood cell count 28,000 per cubic millimetre. The hæmoglobin value was 50%. The differential white cell count revealed 32% of polymorphonuclear cells and 68% of mononuclear cells; these were of various types, but included a high percentage of immature and primitive cells. The Wassermann test result was negative.

A provisional diagnosis of acute leuchæmia was made. At this stage the help of an expert hæmatologist was considered advisable, and Dr. John McLean was called into consultation. He examined the blood films and obtained and prepared specimens of bone marrow. After examination of these he had no doubt that the diagnosis was one of acute leuchæmia. Dr. McLean's differential count of cells in the bone marrow was as follows: premyelocytes 2·5%, myelocytes 10·0%,, eosinophile myelocytes 1·5%, young metamyelocytes 9·5%, eosinophile young metamyelocytes 0·5%, band metamyelocytes 8·5%, neutrophile cells 11·0%, eosinophile cells 1·0%, lymphocytes 8·0%, monocytes 0·5%, erythroblasts 3·5%, normoblasts 13·0%, mitotic figures 0·5%, "blasts" 30·0%.

Blood examinations were carried out every few days until the termination of the illness. The white cell count gradually increased, to reach a maximum of 43,250 per cubic millimetre on November 25, 1949. Thereafter it gradually decreased, to reach the smallest count of 24,000 per cubic millimetre a few days before the patient's death. The red cell count fluctuated between 3,000,000 and 4,000,000 per cubic millimetre throughout the illness. The blood films maintained a similar appearance from start to finish.

Subsequent Course of Disease.

The proptosis of the right eye steadily increased and early signs of ulceration began to be manifest in the lower half of the right cornea. A right tarsorrhaphy was performed on November 22, 1949, five days after the patient's admission to hospital (Figure I). The fundi were examined under anæsthesia, and there was at most a slight swelling of the right disc, while the left fundus appeared normal. After the lids had been sutured together a small incision was made below the right orbital margin and the point of a pair of artery forceps was introduced into the orbit and opened wide. No pus or fluid was encountered. A wide-bore needle attached to a 20-millilitre syringe was passed into the orbit and an attempt was made to aspirate any fluid present, but without success. The needle encountered a hard rubbery resistance in the region of the muscle cone. Pieces of tissue were excised from the orbit adjacent to the incision and sent for pathological examination. The report revealed normal lachrymal gland.

The left eyeball showed signs of early proptosis about this time, and this was well established within a few days. It was similar in all respects to that exhibited previously by the right eye. The patient's general condition was good, and as there was definite hope that deep X-ray therapy

FIGURE I.
Appearance on December 4, 1949.

applied to the orbits and the exhibition of a-methopterin by mouth would cause a remission with diminution of the proptosis, suture of the left eyelids was postponed as long as possible. The proptosis, however, became so great that operation could no longer be delayed. A left tarsorrhaphy was reluctantly performed on December 8, 1949. This was an operation of no mean difficulty, owing to the enormous proptosis and the forward projection of the very œdematous bulbar conjunctiva. It was only after free incision of the bulbar conjunctiva and the exercise of considerable pressure that the lids could be drawn together. An attempt to examine the fundus failed, owing to a hazy cornea. During succeeding days the eyes bulged forward to an alarming degree, but fortunately the lids remained fused (Figure II).

Up to this date there were no other physical signs to be detected, but small, discrete, lymphatic nodes of the consistence of rubber became palpable in the neck and gradually increased in size until the termination of the illness. The spleen was not palpable at any stage, but the liver became enlarged in the concluding stages of the disease.

The patient became weaker as time went on. Moist sounds appeared in the lungs towards Christmas Day, and the patient died on December 26, some eight weeks after the first signs of disease had appeared. To respect the parents' wishes, post-mortem examination was kept to the bare minimum.

Treatment.

General and Local Treatment.—General treatment followed general medical and surgical indications and needs no special comment. The patient was surprisingly fit and well, except in the concluding stages, and did not appear to suffer undue discomfort. Penicillin injections were given before a diagnosis had been made, but were discontinued subsequently. Local treatment with drops and ointment was designed to prevent secondary infection and apparently succeeded well, as this did not occur at any stage. The suturing of the eyelids was very successful.

Special Measures.—Two special measures were instituted. Firstly, a course of deep X-ray therapy was given under the direction of Dr. John O'Sullivan. This was designed

to check the progressive increase in proptosis, but it was without avail. Secondly, Dr. John McLean prescribed a-methopterin by mouth in doses of 2·5 milligrammes daily. This was commenced on November 30, 1949, and continued until the end. Dr. McLean had found this drug able to produce remissions in previous cases of acute leuchæmia under his care. He was very hopeful that it would cause at least a temporary improvement in this case. However, no treatment prescribed produced any signs of remission or temporary improvement at any stage of the disease.

FIGURE II.
Appearance on December 12, 1949.

Autopsy Findings.

The body was that of a well-nourished boy with very gross bilateral proptosis. A bilateral tarsorrhaphy had been performed. A limited post-mortem examination only was permitted by the parents.

Both orbits were exenterated. There appeared to be no bony involvement by the tumour. The retrobulbar tumours were composed of firm greenish ("cooked asparagus") homogenous tissue, which readily shelled out from the orbit. The pigment remained green for weeks. Sections were taken from the orbits, liver and spleen.

The neck contained some enlarged lymph nodes on the right side along the upper part of the internal jugular vein.

A small mid-line incision was made above the umbilicus and a hand was introduced. The liver was enlarged (7·5 centimetres below the costal margin) but looked normal. The spleen was normal in size, shape and consistency. There was no enlargement of the abdominal lymph nodes.

Microscopic Examination.

The orbital tumour was composed of oval, spindle or irregularly shaped cells with large vesicular nuclei and eosinophilic cytoplasm. The cells were enmeshed in a fine reticulum. The tumour exhibited a polymorphous appearance. In places isolated fat cells, nerves and blood vessels were seen in the tumour mass, but the extraocular muscles had been pushed aside. There were areas of recent and old hæmorrhage in the orbital tissues and many phagocytes containing blood pigment. The eye showed retinal œdema and papillœdema, but was otherwise normal. The normal structure of the spleen was disorganized and the organ was infiltrated with cells similar to those in the orbit.

The liver had some fatty change, but was otherwise normal. The diagnosis was monocytic leuchæmia and chloroma.

Discussion.

The chloroma tumour was first described by Burns in 1821, and in 1885 its relationship to leuchæmia was suggested by von Recklinghausen. This was confirmed in 1905 by Dock and Warthin. The tumour takes its name from its green coloration in the fresh state.

Chloroma is a disease of childhood; most of the recorded cases are in male subjects under the age of twenty years. Green tumours appear in the marrow of long bones, and these may be regarded as the primary tumour, while the deposits which are found in the liver, kidney, skin and subperiostially in the bones of the orbit, face, spine, ribs, sternum and pelvic bones are secondary. Soft tissues such as the musculature may be invaded by the tumour. The nature of the pigment is still uncertain. The green colour is said to fade on exposure to air, but in our case the pigment remained unchanged in a 4% solution of formalin for several weeks.

Chloroma, which is a neoplasm affecting periosteum and bone, with a predilection for the skull, is usually associated with leuchæmia. In this case there was a white cell count of 40,000 per cubic millimetre, and microscopic examination of a blood film revealed a considerable number of immature cells resembling monocytes.

The bone marrow smear showed no increase in immature myeloid or lymphatic cells, but there was present an abnormal number of primitive type cells. These cells were 20μ to 30μ in diameter, with irregularly shaped nuclei and fairly abundant basophilic cytoplasm. The nuclear chromatin was lightly stained, and nucleoli were present. Fine granules and vacuoles were noticed in the cytoplasm.

Such immature cells are characteristic of acute leuchæmia, and as there is a difficulty in the determination of the type of these cells, even with the use of supravital and oxidase stains, they have been classified as "blast" cells.

Although for acute leuchæmia there is no treatment which is curative, the use of folic acid antagonist drugs has been found to produce a remission in about 50% of cases.

With this child, treatment with a-methopterin was carried out and over a period of twenty-five days 65 milligrammes of the drug were administered in doses of 2·5 milligrammes by mouth. There was slight temporary improvement in his clinical condition, but the course of the disease was not interrupted by the use of the drug and no remission occurred. This failure in treatment may have been due to the type of leuchæmia.

Dameshek (1949) found that the best results were in cases of lymphoblastic leuchæmia, and none of his patients with monocytic leuchæmia responded. Farber (1949) postulates that the present classification of leuchæmia on the morphology of cells is unsatisfactory and that a better basis may be developed from a study of response to specific stimuli, such as folic acid antagonists. In this respect it is of interest to report this case of chloroma as representing a type of leuchæmia not responding to an antifolic acid drug.

Summary.

A rapidly fatal case of chloroma is described. The disease failed to respond to a-methopterin.

Acknowledgements.

We are indebted to Dr. Leigh Fitzpatrick, Dr. J. O'Sullivan, Dr. C. Swan, Dr. J. McLean and Dr. K. Howsam, Medical Superintendent of the Victorian Eye and Ear Hospital, Melbourne, for their valuable help in the management of the patient in this case and in the preparation of this paper.

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A CASE OF PROGRESSIVE SUBCUTANEOUS GANGRENE OF SPONTANEOUS ORIGIN.

By N. L. NEWMAN, M.S.,
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SYMBIOTIC (synergistic) gangrene of the subcutaneous tissues, a condition which is uncommon clinically, but which appears to be a popular examination subject, has been described as following surgical operations for suppurative conditions in the abdomen and chest. The spontaneous occurrence of a similar type of progressive subcutaneous gangrene seems sufficiently unusual as to warrant its being recorded. A further unusual feature of the case to be described is that the lesion commenced almost at the same time in five different areas on the patient's body.

Clinical Record.

W.M., a male patient, aged twenty years, was admitted to hospital on July 21, 1950, with a diagnosis of carbuncles. He had been well until one week before, when he developed a large "carbuncle" on the upper part of the right thigh about three inches below the groin, and two smaller lesions, one on the hypogastrium and another on the left buttock. His general health had always been good and he had had no serious illnesses. On examination, he had a large ulcer with a sloughing base and raised necrotic edges on the right thigh. This ulcer was three inches in diameter. There was a similar ulcer one and a half inches in diameter on the anterior abdominal wall and one on the left buttock one and a quarter inches in diameter. There was a narrow bluish-purple area of discoloration of the skin edges, about one-tenth of an inch wide, and an area of hyperæmia three-quarters of an inch beyond that, which merged with normal healthy skin. The subcutaneous tissue beneath the edges, which were raised, was sloughing and discharging thick pus. The floor of the ulcers was composed of thin granulation tissue covering the deep fascia. His temperature was 101·8° F. and his pulse rate was 122 per minute. He looked ill and complained of severe pain when the dressings were removed for inspection of his lesions.

Treatment was commenced with penicillin, 100,000 units every four hours, and "Trisulpha" tablets in an initial dose of three grammes, followed by one gramme every four hours. Swabbings of the discharge were taken for cultural examination, aerobically and anaerobically. After forty-eight hours' incubation, only a scanty growth of *Staphylococcus albus*, coagulase-negative, was reported. The dosage of penicillin was increased to 250,000 units every four hours, and streptomycin (one gramme twice a day) was administered. Two days after his admission to hospital all ulcers had obviously increased in size, and he had developed two additional lesions, one on the chest and one on the right buttock. His temperature remained elevated to 103° F. The leucocytes numbered 32,000 per cubic millimetre, the differential leucocyte count showing the following distribution: 76% neutrophile cells, 5% small lymphocytes, 15% monocytes.

Five days after his admission to hospital he developed a generalized morbilliform rash, which was thought to be a toxic reaction to "Trisulpha" tablets. The administration of these was suspended. The lesions of the chest and right buttock commenced to spread in a similar manner to the original lesions. Local treatment of the lesions consisted of the application of penicillin solution, in a strength of 10,000 units per millilitre, to the lesions on the thigh and buttock, and of hydrogen peroxide solution in saline to the chest and abdominal ulcers. Five days after his admission to hospital aureomycin was prescribed in a dosage of 500 milligrammes every six hours. Antibiotic therapy at that stage was having no effect on his ulcers, which were rapidly spreading. His temperature remained elevated, the maximum reading being 104° F.

Two weeks after his admission to hospital the lesions on the right buttock and right thigh had coalesced, forming an ulcer approximately 12 inches from its superior to its inferior margins and 14 inches from its medial edge on the inner side of the thigh to its posterior edge in the gluteal region. The abdominal ulcer then measured seven inches by six inches. The lesions on the chest and left buttock had not increased in size and showed some tendency to healing on one edge. In the centre of the abdominal and thigh ulcers new epithelium had commenced to grow on the floor of the lesions and had formed healed areas about three inches in diameter.

At this stage it was considered that the condition resembled that of post-operative symbiotic subcutaneous gangrene, although cultures had failed to grow the organisms usually described in this condition. Diathermy excision of the edges of the ulcers was then performed, the line of excision being through healthy skin about three-quarters of an inch from the ulcer's edges. This excised tissue was submitted for culture. When the lesions were dressed two days later, there was no further apparent spread and the edges looked clean. Zinc peroxide cream was applied, soaked in gauze, and the dressing was left intact for forty-eight hours. When the lesions were redressed it was found that further extension had occurred in many areas, where the appearance of the edges was similar to that originally described. Further diathermy excision of the edges was performed, which necessarily resulted in the abdominal ulcer's becoming coalescent with the huge ulcer of the right thigh and buttock. The whole area involved was now 18 inches long, from the right iliac crest down to the middle third of the right thigh, and 21 inches wide, from the left side of the anterior abdominal wall, extending round to the right sacro-iliac region posteriorly. Three catheters with multiple side apertures were then sutured to the floor of this extensive area, which was then covered with thin "Vaseline" gauze and cotton wool. The whole was then covered with waterproof oiled silk, which was secured at its margins with adhesive plaster, the dressings thus being sealed. The proximal ends of the three catheters were brought out through appropriate openings in the dressings and connected to a continuous drip irrigation system. Continuous irrigations of eusol and "Monacrin" were given through the catheters alternately every twenty-four hours. At the next dressing four

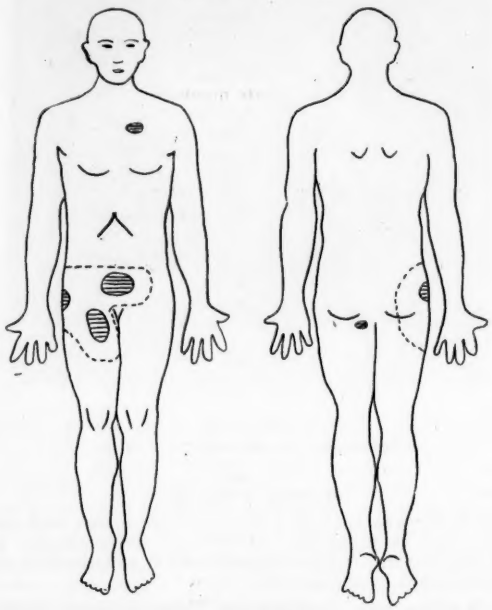

FIGURE I.

Shaded areas, site and extent of lesions shortly after the patient's admission to hospital. Areas outlined by interrupted lines, extent of lesions before spread was arrested.

days later there was no further extension of the edges and the base was covered with healthy granulation. Some purulent discharge was present. The areas of skin in the centres of the ulcers had increased considerably in size. The small lesions on the chest and left buttock were now healed. Irrigations were continued for a further seven days. The patient's condition was much improved; his appetite was much restored, although his temperature did not return to normal for another week. The abdominal portion of the ulcer was then suitable for skin grafting. Reverdin grafts were taken from the left thigh to cover this area. Similar treatment to the remainder of the ulcer on the thigh and buttock was carried out one week later with skin taken from the back.

Healing of this portion of the ulcer was delayed by a *Proteus vulgaris* infection, which destroyed a number of the grafts. The infection responded to streptomycin cream, and final healing was achieved on December 5, 1950, almost five months after his admission to hospital. Direct smears from the pus taken from the excised necrotic edges yielded moderate numbers of Gram-negative bacilli and occasional Gram-positive cocci. Culture (of tissue) produced aerobically and anaerobically profuse growths of *Bacillus coli communis* (fermentation test). Growth was not inhibited by 50 microgrammes of streptomycin per millilitre of broth. Examination of sections of the strips of skin and subcutaneous tissue excised revealed the following findings:

> ". . . that in relation to the ulcerated skin area there is a very dense accumulation of polymorphs which extends through the whole thickness of dermis to some extent into subcutaneous adipose tissues. The infiltrate also extends peripherally beneath the epithelial edge. Within the infiltrate are not very extensive areas of granulation tissue and within these are certain vascular features to be noted. These include fibrinoid degeneration of the wall, enormous swelling of the endothelial cells, occlusion of the lumen by debris, thrombosis and swollen endothelial cells and sometimes a hyaline thickening of the wall of the vessel itself. As these features are noted in the central parts of the lesion rather than of the periphery, it would appear that the changes are secondary to the inflammation and not causally related.

Discussion.

Cullen (1924) described post-operative subcutaneous synergistic gangrene. The infection in this case followed drainage of an appendiceal abscess and it involved the abdominal wall. Meleney and Brewer (1926) demonstrated the bacterial synergistic character of the infection. Meleney (1949) found that in all but one of 19 cases the causative organisms were a non-hæmolytic microaerophilic streptococcus and hæmolytic *Staphylococcus aureus*. The streptococcus was found near the periphery of the lesion, beneath the area of hyperæmia, and the *Staphylococcus aureus* in the gangrenous area.

The lesion most commonly commences as cellulitis of one edge of an operation wound and rapidly advances into healthy subcutaneous tissue. It has been reported (Maingot, 1937) to follow operations for suppurative conditions in the abdomen or thorax, especially acute appendicitis, *empyema thoracis*, breast abscess, perforated peptic ulcer and subphrenic abscess. The lesion involves only skin and superficial fascia, never extending through the deep fascia.

The clinical picture of the lesion is similar to that described in this case, and is characterized by an initial carbuncular appearance, finally developing into an outer bright red zone, dusky purple in the middle and gangrenous in the innermost part, with a central area of granulation tissue. New skin may form from the incomplete destruction of epithelium in sweat glands and hair follicles. The lesions are exquisitely painful, and there is a pronounced leucocytosis. Constitutional symptoms are usually not severe.

The appearance of the lesions in this case resembled that of symbiotic gangrene, although the organism isolated from aerobic and anaerobic cultures of the excised tissue was *Escherichia coli*. Meleney (1949) reports the presence of this organism, which can, by its profuse growth, mask the presence of the essential causative organism, the microaerophilic streptococcus. This could explain the failure to demonstrate the streptococcus in this case. Other features of this case also resembled symbiotic gangrene. There was a pronounced leucocytosis, and the lesions were painful and tender. Pyrexia was higher and toxæmia more severe than usual.

Features of particular interest were the spontaneous origin of the lesions, which occurred in several different sites within a very short period.

More chronic types of burrowing undermining ulcers have been described by Meleney (1949), some of which have followed minor injuries such as abrasions, or infection following a pin-prick. The microaerophilic streptococcus almost invariably has been grown on culture in these cases. The lesions are not affected by antibiotic treatment at present available. The most successful treatment has been the use of bacitracin, unavailable in Australia, which in Meleney's cases invariably arrested the spread of the lesion in a short space of time (Meleney *et alii*, 1949). The drug is given systemically in doses of 10,000 to 20,000 units by intramuscular injection every six hours. Local application of bacitracin in ointment or in wet dressings, in concentration of 500 units per millilitre one to four times daily, may be used. Suspensions of zinc peroxide in saline to form a cream are recommended as the local dressing of choice. The effectiveness of this application depends upon the liberation of oxygen and hydrogen peroxide in a concentration which inhibits the growth of the anaerobic or microaerophilic organisms. If bacitracin is not available, wide diathermy excision of the lesion is usually the only effective method of controlling its progress. The excision must be made into healthy skin beyond the red margin.

Summary.

A case of spontaneous progressive gangrene of the subcutaneous tissues is presented, which clinically resembles post-operative synergistic gangrene.

Anaerobic cultures from the lesion did not reveal the organism which is regarded as the essential cause—namely, a non-hæmolytic microaerophilic streptococcus, probably owing to its being masked by the profuse growth of *Escherichia coli*.

The condition commenced in five separate areas of the body almost simultaneously.

The treatment for this condition has been outlined.

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Reviews.

CARDIOLOGY.

As Dr. William Evans states in his preface to "Cardiology", this work is designed not as an exhaustive account of disorders peculiar to the heart and blood vessels but as a concise treatise on this subject for the medical student preparing for a qualifying or higher examination.[1]

The work begins with a chapter on history taking and physical examination which leads on to a discussion of heart

[1] "Cardiology", by William Evans, M.D., D.Sc., F.R.C.P.; 1948. London and Australia: Butterworth and Company (Publishers), Limited. 9¼" × 6¼", pp. 348, with 269 illustrations. Price: 51s.

sounds and murmurs. A full chapter is then devoted to cardiac enlargement before a discussion of arrhythmia is given. In these early chapters the work generously overlaps the author's book on cardiography recently reviewed in these columns. Considerable space is given to the discussion of systolic cardiac murmurs, including the description of five varieties of innocent systolic murmurs. The latter are clearly described and illustrative phonocardiograms support the analysis. Triple rhythm also receives dogmatic exposition.

Dr. Evans, at the outset, acknowledges the influence of other standard text-books in his writing, yet throughout, his work bears the stamp of original thought, often with little regard for traditional concepts. The chapters are easily read and at no time is discussion allowed to take the reader far from the patient. There is a comforting absence of confusing statistical detail which has submerged some well-known works on cardiology. Accordingly, Dr. Evans shows himself to be primarily a bedside clinician, and when theory threatens practice the former is laid aside.

It is felt that in the last chapter the *raison d'être* of the work is to be found. We have come a long way since prolonged bed rest was enforced for benign extrasystoles; Dr. Evans feels we have not come far enough, particularly in the recognition of benign deviations from accepted normal behaviour of the heart. The last section in fact is entitled "Unwarranted Cardiac Invalidism".

This is a valuable work for senior students and particularly for busy general practitioners who lean towards cardiology. Serious physicians are already familiar with the book.

VENEREAL DISEASE.

THE "Handbook of Diagnosis and Treatment of Venereal Diseases" (A. E. W. McLachlan) has reached its fourth edition and revisions have brought it up to date in regard to the use of penicillin in gonorrhœa and syphilis.[1] The routine advocated in this book for general use in the treatment of early syphilis is a combined method in which penicillin, arsenicals and bismuth are all employed, but in the preface of this edition it is mentioned, concerning penicillin, that: "The easy availability of the modern preparations and their effectiveness has led to an increasing tendency to rely on this drug alone in the treatment of syphilis and to regard as unnecessary the supplementary treatment with arsenicals and bismuth, formerly advised." The author adds a note of warning, with which we agree, that "whatever scheme of treatment is adopted it is more than ever essential that surveillance should be adequate". Time alone can clarify the position in regard to new schemes of treatment, but, from our experience so far, "sero-negative primary syphilis" responds satisfactorily to present accepted schemes of treatment with penicillin alone.

Mention is made of the use of aureomycin in the treatment of chancroid, gonorrhœa and syphilis and of chloramphenicol in gonorrhœa and syphilis, though we have reason to believe that chloramphenicol has, as yet, no place in the treatment of syphilis in human beings.

This handbook maintains its usefulness as a small, concise and very well illustrated guide to the treatment of venereal diseases.

INJURIES OF THE KNEE JOINT.

IN the second edition of "Injuries of the Knee Joint" by I. S. Smillie, the author has retained the original layout but has added some 60,000 words,[2] besides many new illustrations and many new cases to the series of those described. Perhaps the main criticism of this work is still the lack of an accurate estimation of the clinical and functional results of surgery on the joint following the various injuries. The patient's own comments or observations are not enough, but discussing the results of his own operation for the repair of the anterior cruciate ligament, the author lists only these facts. Surely a clinical assessment of the range of movement, amount of abnormal movement still present (if any), presence or absence of pain, and an estimation of the final result expressed as a percentage of normality, would be of greater use to other surgeons who might wish to use the operation described.

The chapter on the menisci occupies some 110 pages and deals with all angles of this important topic, including the author's own operative technique. It is interesting to note that in his series of 1500 menisci removed, 6·33% were found to have no obvious pathological change, for many orthopædists will frankly admit up to 10% of their menisectomies as belonging to this category. The various fractures around the knee joint are clearly described together with the latest ideas on their treatment. While some of the subject matter may be classified as still controversial, yet all orthopædists will find much to interest them and help them to solve the many problems that abound around the knee joint.

[1] "Handbook of Diagnosis and Treatment of Venereal Diseases", by A. E. W. McLachlan, M.B., Ch.B. (Edinburgh), D.P.H., F.R.S. (Edinburgh); 1951. Edinburgh: E. and S. Livingstone, Limited. 7¼" × 5", pp. 376, with 160 illustrations, twenty in colour. Price: 17s. 6d.

[2] "Injuries of the Knee Joint", by I. S. Smillie, O.B.E., Ch.M., F.R.C.S. (Ed.), F.R.F.P.S.; Second Edition; 1951. Edinburgh: E. and S. Livingstone, Limited. 9½" × 7", pp. 408, with many illustrations, some of which are coloured. Price: 50s.

Books Received.

[The mention of a book in this column does not imply that no review will appear in a subsequent issue.]

"Modern Surgery for Nurses", edited by F. Wilson Harlow, M.B., B.S. (Durham), F.R.C.S. (England), with a foreword by Sir Lancelot E. Barrington-Ward, K.C.V.O., M.B., Ch.M. (Edinburgh), F.R.C.S. (England and Edinburgh); Second Edition; 1951. London: William Heinemann (Medical Books), Limited. 8½" × 6".

This work by ten contributors, all medical graduates, is intended to provide nurses with "all the facts required for their examinations".

"Clinical Laboratory Methods", by W. E. Bray, B.A., M.D.; Fourth Edition; 1951. St. Louis: The C. V. Mosby Company. Melbourne: W. Ramsay (Surgical) Proprietary, Limited. 8½" × 6", pp. 614, with 119 text illustrations and 18 plates in colour. Price: £3 16s. 3d.

The third edition was published in 1944.

"Handbook of Pediatric Medical Emergencies", by Adolph G. DeSanctis, M.D., and Charles Varga, M.D.; 1951. St. Louis: The C. V. Mosby Company. Melbourne: W. Ramsay (Surgical) Proprietary, Limited. 8½" × 5½", pp. 284, with 51 illustrations. Price: £2 12s. 6d.

Written by thirteen contributors and intended as a guide for members of the resident staff and for physicians attending courses in pædiatrics at the Post-Graduate Medical School of the New York University-Bellevue Medical Centre.

"Labelled Atoms: The Use of Radioactive and Stable Isotopes in Biology and Medicine", by Raymond Glascock, B.Sc., Ph.D.; 1951. London: Sigma Books, Limited. 7½" × 5", pp. 228, with 59 figures. Price: 10s. 6d.

The book is "an attempt to give readers with some scientific knowledge a selection of the experiments and results that have been obtained by means of tracers".

"The Vitamin B Complex", by F. A. Robinson, M.Sc. Tech. (Manchester), LL.B. (London), F.R.I.C.; 1951. London: Chapman and Hall, Limited. 8½" × 5½", pp. 670. Price: 60s.

The author states that it is the first book to be devoted exclusively to the vitamin *B* complex.

"Textbook of Obstetrics", by John F. Cunningham, M.D., M.A.O., F.R.C.P.I., F.R.C.O.G.; 1951. London: William Heinemann (Medical Books), Limited. 9" × 5½", pp. 510, with 297 illustrations. Price: 40s.

Intended primarily for students. The methods are stated by the author to be in accordance with the ethical standards of the Roman Catholic Church.

"Pars Pro Toto: Breviarium Medicum Internationale", by Alfred Peyser; 1950. Stockholm: Almqvist and Wiksell. 6½" × 4½", pp. 196. Price: 21s.

Explains abbreviations used in different countries in the literature of medicine and the allied sciences.

"Perspectives in Human Malnutrition: A Contribution to the Biology of Disease from a Clinical and Pathological Study of Chronic Malnutrition and Pellagra in the African", by Joseph Gillman, D.Sc., M.B., B.Ch., and Theodore Gillman, M.Sc., M.B., B.Ch.; 1951. New York: Grune and Stratton, Incorporated. 10¼" × 7", pp. 606, with 259 illustrations. Price: $18.00.

The object of the book is clear from the subtitle.

The Medical Journal of Australia

SATURDAY, JULY 21, 1951.

All articles submitted for publication in this journal should be typed with double or treble spacing. Carbon copies should not be sent. Authors are requested to avoid the use of abbreviations and not to underline either words or phrases.

References to articles and books should be carefully checked. In a reference the following information should be given without abbreviation: surname of author, initials of author, year, full title of article, name of journal without abbreviation, volume, number of first page of the article. If a reference is made to an abstract of a paper, the name of the original journal, together with that of the journal in which the abstract has appeared, should be given with full date in each instance.

Authors who are not accustomed to preparing drawings or photographic prints for reproduction are invited to seek the advice of the Editor.

THE CONTROL OF LEPROSY IN QUEENSLAND.

IT is twenty-five years since any important discussion by Australian practitioners on leprosy was reported in this journal. In July, 1926, A. H. Tebbutt and the late E. H. Molesworth read papers before the Victorian Branch of the British Medical Association. Molesworth dealt with the leprosy problem and Tebbutt discussed tuberculoid leprosy. Molesworth attacked the subject with the energy and directness which were typical of him. He referred to the work of G. H. Taylor, of Sydney, who showed that there are leprous infections so mild that they would not be discovered unless the medical attendant was specially watching for signs of the disease. Molesworth was uncompromising in his opposition to the segregation of lepers and their deprivation of almost all civil and human rights. He held that they were not dangerous to the community. He suggested that the only places where internment of lepers might be useful were those in which it was impracticable by reason of the huge number of natives affected, and that the only places where it was practicable were those, like Australia, in which it was quite unnecessary and might be actually harmful. In the discussion that followed the presentation of the papers, H. R. Dew said that Molesworth had proved his case that in Australia "segregation of such a lowly infective disease was unnecessary, ineffectual and, when the apathy with regard to such scourges as tuberculosis and venereal disease was considered, almost farcical". At Dew's instance the meeting adopted the following resolution:

> That the Commonwealth Government should take into consideration the desirability of dealing with leprosy as a national problem and that in doing so the necessity for humane methods be recognized.

This resolution seems to have been nothing but a pious gesture; nothing was done. Indeed it is doubtful whether, under the provisions of the Constitution, the Commonwealth Government could do anything, for the control of leprosy is a State matter. Recently certain action has been taken in Queensland and it is to this that we propose to draw attention.

In January, 1950, after an extensive visit to medical centres in other parts of the world, Dr. Abraham Fryberg, the Director-General of Health and Medical Services of Queensland, made a report to his Government on the control of leprosy. A great part of this most interesting document is taken up with a description of the federal control of leprosy in America. In the United States the control of leprosy, as in Australia, is in the hands of the individual States. Dr. Fryberg points out that as only isolated cases occur in some of the States and as legislation varies in different States, particularly in the matter of compulsory isolation, the Federal Government in 1921 provided a hospital for the treatment of all patients in the United States suffering from leprosy by taking over the leprosarium of the State of Louisiana. This institution is known today as the United States Marine Hospital, Carville, Louisiana, and is under the direct control of the United States Public Health Service. There are no charges to patients. The functions of the hospital are as follows: (*a*) To protect the public, and particularly patients' families, from the danger of contracting the disease by isolating the patient. (*b*) To treat patients in the hope that the disease will be arrested and a cure effected. (*c*) To instruct medical practitioners, nurses and other personnel in the diagnosis and treatment of leprosy. (*d*) To advance scientific research into leprosy, its diagnosis, complications and treatment. Any patient who goes to Carville does so on a voluntary basis, as the State has no power to isolate a patient outside the State and the Federal Government has no power to isolate a patient with leprosy. Apparently no trouble is experienced in getting patients to stay, for conditions have been made so attractive that patients are happy to stay until they are ready for discharge. Dr. Fryberg describes the type of accommodation and the general set-up of the institution; those who made the arrangements have had the comfort of the patient in mind first and last. It is important to note that only patients with positive smears are admitted. If a smear is "negative", as so often happens with tuberculoid leprosy, admission is refused. On the other hand, once a patient is admitted he can stay as long as he likes, even though his smears are no longer positive. The reason for this is that some patients have nowhere to go and would neglect themselves, and this would favour the occurrence of relapse. In the matter of discharge the practice is interesting. The patient is discharged after he has given at monthly intervals twelve negative smears from carefully selected areas. The State medical officer is notified, but we are told that no follow-up is carried out by the State. The "general impression" that patients should be examined every year for an indefinite period after discharge is an impression only because the State does nothing about it. It is of interest to learn that in such a supposedly well-organized community as the United States such lack of coordinated action can exist. However, what is known as a "medical discharge" is arranged if a patient with a positive smear wishes to leave. Such a discharge is allowed if the following provisions are observed. (*a*) Such a course must be acceptable to the health authorities of the State to which the patient desires his discharge. (*b*) The patient must produce a letter from a private doctor stating that he is willing to treat

the patient. (*c*) The patient must be financially able to afford the services of the doctor and to buy the necessary drugs. (*d*) There must be in the house no children under the age of eighteen years. (*e*) The patient must not work while he is "positive".

These details of the method of control adopted by the federal authorities in the United States have been set out to indicate the way in which the leprosy problem is regarded in that country. Dr. Fryberg refers to the activities which he found in other centres, but these need not be described. He is concerned with an improved state of affairs in Queensland, where patients suffering from leprosy are kept on Peel Island. His aims may be indicated by the following summary of his recommendations.

1. That a new leprosarium be built on a suitable site on the mainland, in preference to Peel Island.

2. The accommodation provided for patients should consist of single rooms in dormitory buildings for single persons, and small cottages or flats for family units.

3. Persons suffering from clinical leprosy with negative smears should receive treatment: therefore an order should be issued, and at the same time a release signed, under conditions to be laid down by the Director-General, except in such cases as the patient does not cooperate.

4. The period during which the patient gives clean smears before release should be decreased from fifteen to twelve months, and if negative smears are given for six years after release, the patient should be discharged.

5. A patient who is bacteriologically negative for six months may be released under certain conditions.

6. A patient who is bacteriologically positive may be released for a period not exceeding one month in the case of an emergency such as the imminent death of an immediate relative, provided certain conditions can be fulfilled.

7. That patients be allowed visitors in addition to the present visiting days, between the hours of 9 a.m. and 4 p.m., daily, provided that they obtain a visitor's pass and make their own transport arrangements, without charge on the department.

8. The term "leper" be replaced by "person suffering from Hansen's disease" and the term "Hansen's disease" replace the term "leprosy" in all except legal correspondence.

9. The appointment of a visiting orthopædic surgeon and a plastic surgeon to Peel Island as required.

10. Family contacts should be examined at such times as is required by the Director-General.

11. An approach be made to the Commonwealth Government to continue pensions until the patient is discharged. This would be approximately six years after release.

12. Regulations be promulgated governing the admission and discharge of patients suffering from leprosy.

Clearly Dr. Fryberg does not agree with the sweeping conclusions stated by Molesworth some twenty-five years ago. He is, however, insistent on the humanitarian handling of the problem. It is satisfactory to learn that his recommendations have been accepted, that a new site for a leprosarium on the mainland has been chosen, and that plans have been drawn for the building. Some of the recommendations have been implemented, but regulations will not be issued until the leprosarium is transferred to the mainland. If Dr. Fryberg had advocated non-segregation, in all probability nothing would have been done; non-segregationists may console themselves with this idea. Dr. Fryberg has expressed the opinion that the medical profession and the public need to be educated if what he would prefer to see referred to as Hansen's disease is to be treated both scientifically and from the humanitarian aspect. Of prime importance, of course, is the education of responsible governments, and Dr. Fryberg is apparently doing this with some success.

Current Comment.

PHARMACOLOGY AND THERAPEUTICS, WITH REFERENCE TO THE HEART.

IN Bruce and Dilling's "Manual on Materia Medica and Therapeutics", described in the sub-title as "An Introduction to the Rational Treatment of Disease", the authors discuss the pharmacology and therapeutics of many drugs under the headings of actions and uses.[1] One might be forgiven for thinking that all that stood between the medical practitioner and the rational treatment of disease was an understanding of the pharmacological actions of drugs. It is, of course, on this basis that proprietary remedies have largely displaced the homely prescription. Everything that is claimed for the drug, together with its adjuvants and correctives, is based on sound pharmacology, but its action may be ephemeral in the diseased person; or even if it is not, its action may be negligible when measured against the sum total of the patient's distress. Stimulation of the healthy anæsthetized cat with a drug in the pharmacology laboratory is not quite the same as flogging the tired and ill human being with the same substance. There are causes which conspire to defeat our attempts to form a detached judgement about the uses of the drugs we employ. It is not the fault of the pharmacologist who may state no more than the facts about their actions. It is partly the fault of the doctor who fails to examine the mainsprings of his actions as a physician. The truth is that doctors are deeply involved in the enterprise of getting the patient better, or even of relieving a symptom. This is particularly true of the therapeutics of chronic disease, and nothing restores the vanishing confidence of the doctor more than the advent of a remedy which seems to have an action to meet the needs of his patient. Such may be the natural history of the disease that he will never know whether the drug has had an effect. If he is no naturalist he may accept the remedy without reserve, to find some years later that he is one of the few still using it. Whatever the pharmacological actions that gave a rational basis for the use of gold salts in pulmonary tuberculosis, there can be little doubt that the resulting therapeutic benefits were conferred equally on the flagging morale of the doctor and the waning hopes of the patient. These are not negligible attributes of therapeutics, but they are apt to cloud judgement.

A short monograph by John McMichael with the arresting title "Pharmacology of the Failing Human Heart" seemed to promise a rational basis for the use of cardiac drugs in the practice of medicine.[2] This promise is only partly fulfilled, as McMichael himself admits. The monograph is based on a number of lectures delivered at different times in various parts of the United States presenting research work carried out by McMichael and his colleagues. It reads as a collection of lectures or papers rather than as a closely reasoned dissertation such as one might expect in a monograph. In the preface McMichael withdraws his hypothesis that the reduction of venous pressure is the most important action of digitalis. During its short life this hypothesis was strongly held, and in 1947 McMichael wrote: "Direct study of the isolated heart has failed to demonstrate any consistent direct action of digitalis in increasing the strength of myocardial contractions. It is possible that such an action exists in the failing heart, but it is of minor importance in clinical therapeutics compared with the action of digitalis in reducing venous pressure."[3] Without our questioning the stimulus to investigation roused by this hypothesis, it is apparent in retrospect that it did not satisfy the canons of scientific validity. In his frank admission of a faulty hypothesis, McMichael concludes that

[1] Bruce, J. M., and Dilling, W. J. (1921), "Materia Medica and Therapeutics", Twelfth Edition, London, Cassell.

[2] "Pharmacology of the Failing Human Heart", by John McMichael, M.D., F.R.C.P.; 1950. Oxford: Blackwell Scientific Publications. 8½" × 5½", pp. 71. Price: 8s. 6d.

[3] McMichael, J. (1947), "Advances in Internal Medicine", Volume II. New York, Interscience Publishers, Incorporated.

observation is more important than interpretation. Surely this cannot be true. Karl Pearson defined the scientific method as the collection of facts, their careful and often laborious classification, and finally by the use of the disciplined imagination the discovery of a brief statement or formula that in a few words resumes a wide range of facts. Observations can be made by a trained technician, interpretation demands the higher faculty of a disciplined imagination. This is still comparatively rare, even among research workers.

The monograph begins with a chapter expressing general ideas on heart failure. Heart failure is divided into two groups, one characterized by low and the other by high cardiac output. This division seemed important at the time when importance was attached to the effect of digitalis in reducing venous pressure. The inference was that the use of digitalis was contraindicated in cardiac failure with high output. Indeed, in 1947 McMichael wrote: "One recollects cases in which death seems to have followed rapidly on attempts at digitalization." Despite this, many physicians continued to use digitalis in such cases, and now it is doubtful whether any useful clinical purpose is to be served by the division. Certainly there are no physical signs that clearly distinguish the groups. Later on McMichael examines the validity of Starling's law of the heart, and points out that it no longer holds the dominant position in the physiological integration of the circulation once ascribed to it. As yet, however, nobody has assailed its major importance. The response of the failing heart to venesection and to mercurial diuretics is then considered. McMichael deals with the action of theophylline-ethylene-diamine, perhaps better known under its numerous trade names. He states that this drug has gained an established place in cardiac therapy. That this is a justifiable statement is open to question. The drug is almost certainly not holding its place, and if it is then it is not doing so on its merits. As a diuretic it cannot compare with the mercurial compounds. It is said to have an important action in abolishing Cheyne-Stokes respiration, but, as a practical matter, of what immediate or remote benefit is this if the person is afflicted with heart failure? Cheyne-Stokes breathing is a peaceful state of affairs compared with the usual forms of cardiac dyspnœa. The occasions on which reversion to a more regular form of breathing adds to the patient's comfort or longevity must be rare. In most cases the exhibition of the drug would be based on a confusion between pharmacological action and therapeutic use. The third action of theophylline-ethylene-diamine is to dilate the coronary vessels. The evidence for this in the failing human heart is nebulous. This pharmacological action was at one time put forward as a basis for the therapeutic use of the drug in *angina pectoris*. It suffices to say that it has fallen into disuse. It has also been demonstrated that theophylline has a stimulating action on the myocardium, but it has never been shown that it has a therapeutic use because of this action.

One of McMichael's longest discussions deals with digitalis and strophanthus. Its length, McMichael states, is a revelation of our fundamental ignorance of the mode of digitalis action. This is a modest statement by the leader of a group of British research workers who have won world-wide recognition for their imaginative use of the opportunities presented by the access to the right side of the heart.

The last chapter, "Special Therapeutic Problems", is a disappointing excursion into the therapeutic field. There is still room for a critical review of the value of digitalis that would emphasize the gulf that lies between pharmacological action and therapeutic use. Up and down the world digitalis is used for breathlessness, palpitation, murmurs, high blood pressure, heart disease, and the suspicion of heart disease, and it is used indiscriminately because of failure to distinguish between action and use. The evidence showing that it has had a therapeutic use is often accepted uncritically, and indeed is not often susceptible of any proof. Disproportionate stress is laid on distinctions in pharmacological action between various active principles which are of small account in relation to the massive problem of their therapeutic usefulness in cardiac failure. Loyalty to one preparation with the occasional use of perhaps two others should cover the physician's wants.

Perhaps it is a heresy to say that digitalis is a disappointing drug. It is not disappointing for those who appreciate its limited field of usefulness, and its possible extension beyond that field into another where its usefulness is unpredictable. McMichael quotes Gavey and Parkinson[1] in support of the benefit obtained from digitalis in heart failure with normal rhythm. These authors reviewed the observations of previous writers on this subject, and the general conclusion was that digitalis does not succeed so often or so well as in heart failure with auricular fibrillation. In their own series Gavey and Parkinson regarded the effect of digitalis as successful in 60% of cases, but they qualify this by stating that only 12% of patients showed striking improvement. In their control series with auricular fibrillation 28% of patients showed striking improvement. It does not seem possible to provide the conditions necessary for a scientific judgement on the value of digitalis in cardiac failure. Pronouncements made therefore depend on the authority of those who make them rather than on sound objective data. Another interloper has stolen some of the limelight from digitalis. The discovery of potent mercurial diuretics has probably provided greater benefit to those with heart failure than has digitalis. Perhaps digitalis should rank third in usefulness after morphine and mersalyl. Gavey and Parkinson (1939) wrote that "Salyrgan is more than an adjuvant in failure with œdema, but it does not meet the inherent difficulty—myocardial insufficiency. At the best a mercurial diuretic simply removes collected and stagnant fluid and thereby relieves the patient." This is possibly but not certainly true. McMichael points out that during mercurial diuresis the pressure in the right side of the heart falls, and the cardiac output tends to rise. It must be within the experience of every cardiologist that it is possible to keep some patients ambulant and comfortable for months and even years after recovery from congestive cardiac failure by the use of mercurial diuretics alone. It is conceivable that alteration of body fluid dynamics and fluid chemistry is at least as important in promoting efficient action of the myocardium as is digitalis with its unpredictable action in stimulating the failing myocardium. It is not unwise to suggest that the continued study of the pharmacology of digitalis may throw further light on the factors involved in heart failure, but is unlikely to enlarge its field of usefulness.

HÆMOPHILIA IN THE FEMALE.

THE rare event of a case of hæmophilia in the female has been reported by M. C. G. Israëls, H. Lempert and E. Gilbertson.[2] A *primigravida* was delivered of a healthy girl without difficulty, though care was taken because of a history of easy bruising and free bleeding. The early part of the puerperium was uneventful, but after about ten days hæmorrhage became alarming and hysterectomy was carried out to control it. A stormy convalescence ended satisfactorily. Preliminary laboratory investigations produced findings similar to those of hæmophilia, and the diagnosis was confirmed by fuller investigation and an examination of the family history. The patient's father and paternal uncle were known hæmophiliacs, as was her maternal uncle; her sister was a known carrier since she had had a hæmophilic son. Her mother was presumably a carrier. This is, of course, the theoretical situation required to produce a hæmophilic female, but the general opinion has been that the combination is lethal and that the female hæmophiliac, if ever conceived, dies *in utero*. In this case the patient satisfied the most exacting diagnostic criteria and capped the rare circumstance by giving birth to a healthy child.

[1] Gavey, C. J., and Parkinson, J. (1939), *British Heart Journal*, Volume I, page 27.

[2] *The Lancet*, June 30, 1951.

Abstracts from Medical Literature.

OBSTETRICS AND GYNÆCOLOGY.

Diagnosis of Early Carcinoma of the Cervix Uteri.

G. W. DOUGLAS AND W. E. STUDDIFORD (*Surgery, Gynecology and Obstetrics*, December, 1950) discuss the diagnosis of early carcinoma of the cervix and report a study of 16 cases of pre-clinical carcinoma of the cervix. They state that there has been a reorientation of ideas concerning the early stages of carcinoma of the cervix in the past twenty years. Instead of the lesion's being "volcanic" from the start, it is now regarded as a neoplasm with a prolonged period of quiescence in the initial phase, during which time it is limited to the surface. This preliminary stage is termed carcinoma *in situ*, intraepithelial cancer or pre-invasive cancer. This lesion would appear to be irreversible in the non-pregnant woman. The authors state that the problem of diagnosis of cancer of the cervix in its early pre-invasive phase presents obvious difficulties, and they stress the importance of repeated random biopsies on any cervix which presents a deviation from normal at the squamo-columnar junction. Cytological studies of cell smears are a further aid to early diagnosis. Since there is no visible or palpable lesion of the cervix in the majority of cases, the authors recommend that biopsy be taken from four quadrants of the external os by means of a punch. The chief use of examination of cell smears lies in the fact that they should pick up even the smallest lesions, provided they are not located high in the cervical canal. The authors consider this not a method of diagnosis, but a means to select patients for careful study by biopsy and curettage. The microscopic features of the cases reported are described and illustrated. Histologically the cells of the epithelium involved show the characteristic features of malignant change without invasion. The extent of the superficial lesion may vary from a minute one at the squamo-columnar junction to one which involves the whole vaginal cervix and spreads up the cervical canal. The average age of patients in this series was forty years; six of the patients gave a history of irregular vaginal bleeding and three patients had contact bleeding. The authors state that the frequent association of other uterine abnormalities such as fibroid tumours should not blind one to the possible presence of early cervical cancer. The more extensive use of total hysterectomy should be obvious.

Uterine Contractility.

R. CALDEYRO, H. ALVAREZ AND S. R. M. REYNOLDS (*Surgery, Gynecology and Obstetrics*, December, 1950) record observations on uterine contractility through simultaneous recording with an internal and a seven-channel external method. Preliminary observations are made in cases of normal labour, prolonged labour and false labour. The external method records simultaneously the activity of the uterus at seven areas—the centre and both sides of the fundal area, the centre and both sides of the mid-uterine area, and the centre of the lower segment of the uterus. By means of seven receptors the local activity of the particular part of the uterus is recorded on a tambour. The internal method registers the pressure exerted on the amniotic sac at any moment and is recorded on a manometer connected to a needle passed through the abdominal wall into the amniotic cavity. The amniotic pressure is the resultant of the activity of the different parts of the uterus and depends on the intensity of the contractions of each part of the uterus and the degree of synchronization between the different parts of the contracting uterus. The authors have observed that in normal labour there is strong fundal dominance, in prolonged labour there is no frank fundal dominance, and in false labour there is an absolute lack of fundal dominance. They are unable, at present, to draw conclusions concerning the relationship between the intensity of contractions in the two sides of the uterus on the progress of labour. Normally there is found to be good synchronization between the different parts of the uterus. When there is frank and persistent asynchronization the progress of labour is slow. In cases of false labour there is good synchronization of contractions in different parts of the uterus, but there is no fundal dominance. The authors observe that the criteria of contractions for normal and quick labour are (i) large absolute intensity of the contractions of the whole uterus, (ii) strong fundal dominance, (iii) good synchronization between the different contracting parts of the uterus, (iv) regularity in the rhythm, intensity and form of contractions, and (v) descent of the amniotic pressure during relaxation to the level of the normal "tonus" of the uterus. The effect of factors such as age of the patient, parity and fœtal presentation on these characteristics of uterine contractions is yet to be studied.

Hæmorrhage from Marginal Sinus Rupture.

JOHN S. FISH, R. A. BARTHOLOMEW, E. D. COLVIN AND W. H. GRIMES (*American Journal of Obstetrics and Gynecology*, January, 1951) have shown that rupture of the placental blood channel known as the marginal sinus is responsible for many hæmorrhages ascribed to *placenta prævia*, *abruptio placentæ*, or causes unknown, and suggest this as a possible explanation of the fact that Cæsarean section for painless hæmorrhage with a presumptive diagnosis of *placenta prævia* frequently discloses a normally situated placenta. They state that the marginal sinus is a constant structure situated just outside or just within the marginal cotyledons beneath the Waldeyer ring, composed for the most part of a thin velamentous wall closely approximated to the reflection of the membranes from the placental margin. Functionally, the sinus constitutes a link in the return blood flow from the placental bed to the uterine circulation. In advanced pregnancy the sinus has a fragile transparent membranous wall, with great vulnerability because of its location and little or no peripheral support. It may also be subject to stresses placed upon the membranes at their placental attachment and may under stress fail to contain the volume of maternal blood reaching the periphery. In 147 cases of hæmorrhage during the third trimester or during labour, among 2655 consecutive deliveries, ruptured marginal sinus accounted for 50 (33·9%), as against *placenta prævia* 51 (34·6%) and *abruptio placentæ* 14 (9·6%). The diagnosis is established mainly by examination of the placenta, which has recent or old blood clot overlying a tear in the marginal sinus spreading out over the adjacent membrane and occasionally covering a narrow portion of the maternal surface of the marginal cotyledons. Clinically, the frequency of rupture of the marginal sinus increases progressively in each successive month of the third trimester and is highest during labour. Sinus rupture is associated with a higher incidence than *placenta prævia* of bleeding during labour (29 cases to 18) and also a greater tendency to bring on labour both before and at term. The hæmorrhage also shows less tendency to recurrence than is found with *placenta prævia*, but simulates *placenta prævia* in respect of absence of pain and the profuse character of the bleeding. Gross hæmorrhage is more common with ruptured marginal sinus. As with *placenta prævia*, the authors agree that expectant management is even more applicable to the hæmorrhage of ruptured marginal sinus, in which the risk to mother and baby is much less provided blood loss is replaced.

Endometriosis.

SAMUEL L. SIEGLER AND J. R. BISACCIO (*American Journal of Obstetrics and Gynecology*, January, 1951) analyse 88 operative and histologically proved and 74 clinical cases of endometriosis taken from a series of 2000 consecutive private patients with varied gynæcological complaints. They state that approximately 80% of the patients with external endometriosis were in the age groups of twenty-six to forty years and 75% of those with internal disease in the groups thirty-six to forty-five years. The symptoms in all groups were manifold, the most common being progressive dysmenorrhœa, menstrual abnormalities, and low abdominal pain. The most frequent physical findings were cul-de-sac tenderness and irregularity, palpably enlarged ovaries, tender adnexæ with or without induration, and uterine enlargement almost invariably due to coexisting fibromyomata. In 57 of the 141 cases of external endometriosis the patient had an associated retrodisplacement. Prolonged childlessness, generally with a history of long use of contraceptives, was frequent in all types, suggesting that endometrial lesions may be caused by deficiency of endocrines normally produced during pregnancy. Accordingly early marriage and frequent childbearing may be regarded as prophylactic factors. The most frequent site in the operatively proved cases of this series (88) were the ovary (51 times), the posterior cul-de-sac (38 times) and the recto-sigmoid colon (11 times). The treatment in young women was preferably conservative and expectant. Medication with thyreoid given empirically, and androgen and œstrogens used judiciously, was effective in a number of cases. The mode of action of stilbœstrol in large doses can only be conjectured, and the authors recommend that its use should be cautiously and judiciously individualized. The results of conservative surgery were gratifying in that re-operation for

exacerbation of symptoms was required in only 5% or 6% of cases. The authors usually perform pre-sacral neurectomy as well, to cure the existing dysmenorrhœa. Excision, application of high-frequency currents or carbolization is used to destroy peritoneal implants. With patients over forty years of age there is no hesitation about radical operation, and a panhysterectomy should be performed whenever possible. In the lower age groups surgery was resorted to only when the symptoms were uncontrollably progressive. There appeared to be no significant difference in the number of pregnancies following upon conservative surgery, upon palliative therapy or upon no therapy among women in the same age groups.

Extraovarian Brenner Tumour.

TERENCE G. ROBINSON (*The Journal of Obstetrics and Gynæcology of the British Empire*, December, 1950) reports a case of Brenner tumour occurring in an extraovarian site. As far as the author is aware this is the first reported instance of an extraovarian Brenner tumour, and he considers that this extraovarian site of the tumour supports Meyer's explanation of the histogenesis of these tumours. The patient was a parous woman, aged sixty-four years, who had a previously normal obstetrical and gynæcological history; she had had a normal menopause at the age of fifty years. A palpable mass was discovered in the lower part of the abdomen on the left side; this was thought to be a uterine fibroid tumour or an ovarian tumour adherent to the uterus. At operation a mass was removed which was considered to be a broad ligament fibroid tumour. Both ovaries were present, and the mass was removed without undue trouble. Microscopic examination of a section of the tumour showed a cyst of pseudomucinous type; in the remainder of the section were islands of epithelial cells set in a fibrous background with oat-shaped nuclei typical of Brenner tumour. The diagnosis of Brenner tumour was confirmed by two other pathologists. The author states that Robert Meyer in 1932 suggested that Brenner tumours originated from cell nests of Walthard, but although these cell nests are commoner in the serous coats of the tubes and broad ligaments than in the ovaries, no extraovarian Brenner tumour had been reported. The author considers that this reported case provides the missing link which completes the chain of evidence concerning the histogenesis of Brenner tumours.

Vaginal Hysterectomy.

FRANCIS J. BURKE (*The Journal of Obstetrics and Gynæcology of the British Empire*, December, 1950) presents a study of 585 patients who had undergone vaginal hysterectomy. After a brief historical review of the operation and consideration of the anatomy of the essential supports of the uterus, the author describes his operative technique. He states that the operation aims at retaining the maximum control of the ligamentous attachments of the uterus, which, after removal of the uterus, are firmly united in the midline to provide a secure foundation for the vaginal vault. Features of the author's operative technique are as follows. The pouch of Douglas is opened early in the operation, and the broad ligaments are divided from below upwards without the use of clamps. The simple device of leaving a thin layer of cervix attached to the ligaments in the base of the broad ligament increases the safety and ease of the operation. After removal of the uterus the ligated stumps of the ligaments are sutured in the mid-line to form the keystone of the ligamentous arch supporting the vault. Usually anterior and posterior colporrhaphy conclude the operation. The author states that in procidentia it is not necessary to suture the supporting ligaments to the anterior pubo-cervical fascia, but it is important to secure the upper posterior vaginal wall to the united utero-sacral ligaments. Vaginal hysterectomy can be successfully combined with le Fort's operation in the treatment of procidentia with atrophic tissues in elderly patients. The mortality rate of the series reviewed was 0·5%. Post operative complications included infection of the urinary tract, several cases of hæmatoma of the vagina and perineum, and serious secondary hæmorrhage from the vagina on a few occasions. There were no urinary tract injuries, but the rectum was opened on two occasions and no trouble ensued after immediate repair. The chief indications for the operation were prolapse (80%), abnormal uterine bleeding (60%) and fibroid tumour (15%). Assessing the results of vaginal operation combined with repair, the author enumerates disadvantages of the Manchester operation and concludes that the former operation gives very satisfactory results. He considers that vaginal hysterectomy combined with colporrhaphy is a rational treatment for vault prolapse and that it will supersede the Manchester operation, except for the feeble or elderly.

Transverse Lie.

E. C. GARBER AND H. HUDNALL (*American Journal of Obstetrics and Gynecology*, January, 1951) review 65 cases of transverse lie which occurred in 27,249 deliveries, an incidence of 0·24%, or one in 419 deliveries. Overall there were six maternal deaths, or an incidence of 9·2%, but in the period since 1941, during which time there have been 26 cases, there has been no maternal loss. The ætiological factors were obscure; in only three cases had the mother a contracted pelvis and in only five cases was *placenta prævia* present. The incidence was much higher in premature labours, and the ratio of *multipara* to *primipara* was four to one. The arm prolapsed in 30 cases. The lowest gross fœtal mortality (four out of sixteen cases) occurred among the patients delivered by Cæsarean section, but in three of those cases the operation was performed for maternal indications and no fœtal heart sounds were heard prior to operation. In 33 cases the patients were delivered by version and extraction, with a fœtal mortality rate of 29 out of 33. In the past six years the fœtal mortality rate has decreased by 25%, whilst the Cæsarean section rate has increased to 57%—a factor which the authors think is also responsible for the drop in maternal mortality. In treatment the authors urge early correction of the malpresentation when discovered in routine ante-natal examination. They state that after the membranes have ruptured or labour has commenced, the dangers increase. Branxton Hicks's version may be indicated if the fœtus is dead or previable, the pelvis ample, the cervix two or more centimetres dilated and the uterus relaxed. If the cervix is fully dilated, the pelvis is normal, the membranes are intact and the uterus is relaxed, delivery by internal podalic version and breech extraction can be attempted. Rupture of the uterus is a dangerous and frequent complication in neglected cases, and after vaginal delivery an intrauterine examination should be carried out to exclude it. The more frequent use of Cæsarean section will reduce fœtal and maternal mortality, and antibiotics, sulphonamides and blood transfusion should be used freely when indicated.

Spontaneous Hæmatoma of the Rectus Abdominis Muscle.

HAROLD BROADY (*The Western Journal of Surgery, Obstetrics and Gynecology*, January, 1951) reports three cases of spontaneous hæmatoma of the *rectus abdominis* muscle encountered at the Beth Israel Hospital over the period 1930 to 1947. One patient was a male, and a diagnosis of incarcerated intramural hernia was made; two patients were females, and the pre-operative diagnosis was twisted ovarian cyst. The author briefly reports the three cases, reviews the literature on the subject and discusses the differential diagnosis. He states that Teske in 1946 reviewed the literature and analysed 100 cases. Only 17 of the 100 cases were diagnosed correctly, and 22 were incorrectly diagnosed as ovarian cysts. Pitfalls in diagnosis include appendicitis, irreducible hernia, sarcoma, dermoid, fibroma, and less commonly gumma, actinomycosis and tuberculosis of the *rectus abdominis* muscle. Trauma is said to be a frequent cause of this condition and is usually associated with considerable bodily effort in young men especially connected with athletic and military manœuvres. Other ætiological factors are those associated with pregnancy, labour and the puerperium, and degeneration of the muscle in the course of debilitating diseases. Spontaneous hæmatoma of the *rectus abdominis* muscle is reported as being three times more common in women than in men, and it may occur at any age from seventeen to eighty years. The most common site of the hæmatoma is in the right lower quadrant (half of all cases) followed by the left lower quadrant, right upper quadrant and left upper quadrant. The frequency of hæmatoma in the lower quadrants is explained on anatomical grounds. Below the level of the *linea semicircularis*, where the posterior wall of the rectus sheath ends, the *rectus abdominis* muscle is separated from the peritoneum by the transversalis fascia, on which lies the inferior epigastric artery with its anastomoses to the descending branch of the superior epigastric artery. Because of this anatomical deficiency a hæmatoma in the lower half of the muscle is more apt to cause peritoneal irritation. According to the author, pain is the most common symptom, and a diffuse, tender, localized mass is felt. The association of vomiting, shock, slight temperature rise and leucocytosis gives the picture of an acute abdominal condition. If a correct diagnosis can be made, rest, sedation and observation may be all that is necessary in the way of treatment.

Medical Societies.

MELBOURNE PÆDIATRIC SOCIETY.

A MEETING of the Melbourne Pædiatric Society was held at the Children's Hospital, Carlton, Melbourne, on March 14, 1951.

Pædiatric Psychiatry.

DR. JOHN F. WILLIAMS read a paper entitled "Pædiatric Psychiatry: Its Scope and Limitations" (see page 76).

DR. STANLEY WILLIAMS, in commenting on "rooming in" of mother and baby together, said that while that procedure was admirable for certain mothers and babies, it was not so desirable for others. Often the mother, especially the one with a large family, was tired and required rest, and did not want to look after her baby in any detail. She already had had all the practice she needed in changing napkins and in carrying out other routine procedures of baby care. The mother with her first baby was usually not tired and was all too eager to see as much of her baby as possible, and to learn how to take care of it under the guidance of a trained nurse. There was no doubt about the value of "rooming in" for that type of mother.

DR. HOWARD WILLIAMS said that several years previously he had been the registrar in charge of infants in the maternity hospital in Newcastle-on-Tyne, where Professor Spence instituted "rooming in". He had observed the routine working of the scheme for three to four months at all times during day and night, and so had seen at first hand the advantages and disadvantages. He agreed with Dr. Stanley Williams that the main benefit was to the young mother with her first child, and also to the mother who was a little anxious about her baby. There was no doubt at all about the value of the close association of mother and baby in those two groups. However, most of the mothers, even those with large families, seemed to like the idea, and it was only occasionally that the close association was not welcomed. One of the major disadvantages of the scheme was the occasionally restless, crying infant, who did disturb other mothers and babies. A small nursery adjacent to the ward seemed to be a satisfactory solution to the problem of that type of baby. In summing up, Dr. Howard Williams said that the two desirable aspects of "rooming in" seemed to be the close physical and psychological contact of mother and baby from the earliest possible time, and secondly, the educational value to the mother in the development of a sound routine of physical and psychological care and understanding of her baby under skilled guidance. Under the nursing regime commonly practised in Australia, in which the baby was cared for in a nursery and the mother merely fed the child, both were complete strangers to one another when the time came for them to go home from the hospital. That was a most undesirable state of affairs and was often the beginning of difficulties in the handling of the baby.

DR. GUY SPRINGTHORPE considered that a balanced approach was necessary to the many problems raised by Dr. John Williams's paper. He said that at the present time there was a swing away from the practice of any rigid routine care of babies and children. That, in his view, represented a reaction from the rather rigid disciplines and routines of twenty years before. At present the reaction was often too great, for a certain amount of routine and discipline was essential to the satisfactory education and bringing up of children. Dr. Springthorpe considered that emotionally stable parents were the most important factor in bringing up children satisfactorily. Different schedules and patterns were equally workable provided the parents were stable and applied intelligently the pattern or routine that they had learnt. Any set of rules of behaviour and conduct in the hands of unstable parents not infrequently failed and often led to emotional difficulties.

DR. JOHN COLEBATCH agreed with the view expressed by Dr. Springthorpe, and had no hesitation in saying that definite routines were essential for most mothers in caring for babies and children. His own experience with "demand feeding" left very little doubt that in many cases it was unworkable. Regular feeding times and amounts were still the sound and safest principle in the feeding of children.

DR. V. L. COLLINS commented on the frequency with which a general practitioner and pædiatrician was confronted with children with some emotional disturbance and ill health. He considered that some degree of teaching and training in simple pædiatric psychological medicine was essential for the undergraduate. He appreciated Dr. John Williams's sane and balanced approach to the problems concerned, and thought that with common sense and elementary training many of the problems could be dealt with adequately by the general practitioner. In referring to "demand feeding", he thought that modification of infant feeding schedules largely benefited the mother from the aspect of being convenient. Just how much the infant benefited was not clearly known. He thought that it was only a few infants that were better fed on the "demand feeding" system, but it did seem to benefit those few.

Nephroblastoma.

DR. REGINALD WEBSTER, in introducing the subject of nephroblastoma, said that tumours which reproduced, in the unrestrained exuberance of malignant neoplasia, the embryonic structure of the tissues or organs in which they arose, occurred characteristically in infancy and early childhood. They formed a group, the most conspicuous members of which were the neurogenic neoplasms—cerebral neuroepithelioma and medulloblastoma, retinoblastoma, and neuroblastoma of the sympathetic system; properly to be included in the group were other truly embryonic tumours, such as nephroblastoma and hepatoblastoma. He proposed to discuss nephroblastoma and make some reference to hepatoblastoma.

Dr. Webster said that it was probably safe to say that no tumour had been presented in more guises of nomenclature than nephroblastoma. In his undergraduate day and generation it was known as renal adenosarcoma of infancy, and for many years its most favoured designation had been the "mixed tumour" of Wilms. It would be his endeavour to show that the tumour in question was not a "mixed tumour", but represented rather a neoplastic exaggeration of normal developmental processes—hence the name nephroblastoma.

Dr. Webster said that the incidence of nephroblastoma might be said to be restricted to infancy and early childhood, to such an extent, indeed, as to render it probable that the tumour was present at birth in many cases, though perhaps not clinically appreciable. As one result of an heroic search of the literature H. Gideon Wells had been enabled to tabulate in 1940 records of five instances of tumours fulfilling all requisite criteria for identification as nephroblastoma which were present at birth; Wells also listed eleven examples of congenital malignant neoplasms which he regarded as almost certainly nephroblastoma. A report of a specimen found in a fœtus was extant under the authoritative signature of the late G. W. Nicholson, of Guy's Hospital.

In Dr. Webster's estimate nephroblastoma accounted for 20% of all malignant tumours of childhood, and 100% of malignant renal tumours. The more common renal carcinoma, to which the discredited term hypernephroma still appeared to cling tenaciously, arose practically never in childhood, and seldom before the twentieth year. The majority of nephroblastomata revealed themselves in the first three years of life, and onset of symptoms later than the tenth year was a very rare occurrence.

Dr. Webster showed slides prepared from representative specimens of nephroblastoma in the museum of the Children's Hospital, pointing out that the portion recognizable as renal tissue appeared as a cap surmounting one pole of the specimen, which otherwise was composed of tissue of medullary consistence, generally pallid, but mottled in varying degree by necrosis and hæmorrhage. A common, indeed a usual, feature of nephroblastoma was a seeming capsule, formed of condensed and attenuated renal tissue encasing the tumour; that limiting factor to local spread facilitated surgical removal to a degree which had often engendered false hopes that complete and final extirpation had been accomplished.

The tumours were usually single and unilateral, and although authenticated reports of multiple and bilateral growths were on record, such had not come within his experience. The presenting clinical feature was an abdominal swelling, which obtruded itself on the notice of the child's mother; hæmaturia was an exceptional occurrence. In a small proportion of cases the neoplasm was confined to the kidney when first discovered, in which event nephrectomy effectively eradicated it. Unfortunately, in the majority of cases a fatal issue was determined by metastases, which were located most frequently in the lungs, though they might also occur in the liver, bones, lymph nodes or peritoneum. An attribute of nephroblastoma which affected prognosis adversely was a propensity to invade veins, and to spread extensively within the lumina of the renal vein and inferior *vena cava*. Extension along the renal vein even to the heart had been recorded, and Professor Harold Dew, of the University of Sydney, had reported, in 1928, the advance of a left-sided

nephroblastoma along the cord to the testis within the spermatic vein.

Dr. Webster proceeded to a demonstration of the microscopic features of nephroblastoma, and showed that they furnished data from which might be deduced the histogenesis and essential nature of the tumour. He emphasized that in their histological characteristics nephroblastomata, or embryonic tumours of the kidney, bore a close resemblance to a very early stage in the development of the kidney. In many fields of microscopic sections of the typical "Wilms's tumour" were to be seen a profusion of undifferentiated and predominantly round cells, massed in clumps or spread out in sheets, and furnishing no clue to their nature or potentialities until a field was lighted upon in which differentiation into some identifiable structure had been attained. Such anaplastic tissue was often plentiful, and it constituted the bulk, or even the whole, of some tumours.

Dr. Webster showed a photomicrograph in which, from a superabundance of round cells, a structure suggestive of an epithelium-lined tubule was beginning to emerge. In other photomicrographs were to be seen more clearly differentiated tubules, with sharply defined lumina, and the evolution of the glomeruli could be traced. A further photomicrograph showed how the round cells differentiated in another direction, and became spindle-shaped and elongated, giving rise to the mesenchyme of the tumour. From the young spindle-celled mesenchyme all the non-epithelial components of nephroblastoma were differentiated —connective tissue, frequently myxomatous, vessels, adipose tissue, smooth and striated muscle fibres and, much less commonly, cartilage and bone. It might require close study of many sections from different parts of a given tumour to discover which, if any, of those seemingly exotic constituents were present. Skeleton structures and striated muscle fibres had been said to occur in approximately one-third of the tumours. Roughly two-thirds exhibited as the only microscopic features undifferentiated round cells, early tubule and glomerulus formation, and spindle-celled mesenchyme with its unstriped muscle derivative, all of which were to be found in the normal embryonic kidney.

Continuing, Dr. Webster said that it had been pointed out by the late G. W. Nicholson that the ubiquitous round cells, in the stage preceding that in which their bipotential capacity became manifest by their differentiation into epithelial tubules and glomeruli on the one hand, and the mesenchyme of the tumour on the other, were clearly in a very primitive phase of development. They were the only components of the tumour which, in addition to undergoing differentiation in the two directions indicated, divided and multiplied in their original form, and were responsible for the increase in size and for the malignant properties of the tumour. When their descendants differentiated into epithelium or mesenchyme, their power to proliferate became less. It diminished to an extent which corresponded with the degree of differentiation attained, until in the most fully developed tubules and muscle cells, it was of the same order as that obtaining in such tissues in the body generally.

In the division and partial differentiation which they exhibited, the round cells appeared to possess all the prospective potentialities of the renal blastema in the embryo, and to be primitive mesoblast or embryonic cells in the strictest sense of the term. A characteristic of the cells of tumours in general, particularly well exemplified by those of embryonic tumours of the kidney, was the constant endeavour to pursue the same orderly steps in differentiation as were taken by the cells of the corresponding tissues of the body. Many of them succeeded in large measure, and in the case of nephroblastoma, very good imitations of renal tubules and of plain muscle, which was abundant in the earlier stages of development of the kidneys, were reproduced. In short, nephroblastomata were neither more nor less than embryonic kidneys, which failed in the ascent to normal development in their inability to accomplish full differentiation. As Nicholson had expressed it, growth of nephrogenic tissue was continuous and excessive, differentiation abortive and imperfect. Both epithelial and non-epithelial constituents were indigenous to the renal blastema, and the occasional appearance of the apparently heterotopic muscle and skeletal tissue was not strange when it was remembered that the mesenchymal spindle cells found normally in nephrogenic tissue might retain the multiple potentiality of such cells for the elaboration of all the natural mesenchymal derivatives.

Hepatoblastoma.

In a brief discussion of hepatoblastoma Dr. Webster said that tumours which seemed to be of a kind with embryonic tumours of the kidney occasionally arose in the liver. They occurred in the fœtus or young infant and consisted of embryonic liver tissue with which tissues at first sight heterotopic, and of mesenchymal ancestry, were sometimes associated. In 1938 he had published details of three specimens of malignant hepatoma from male infants, aged six, four and eighteen months respectively. Two of those tumours had as their microscopic features anaplastic tissue with a suggestion of hepatic design here and there, but no apparent stromal changes; the third was a striking specimen which exhibited microscopically a preponderance of carcinomatous tissue with a general resemblance to hepatic parenchyma, much osteoid tissue spattered with patchy calcification, and some sarcoma-like areas of cellular connective tissue. The presence of such features led him, in reporting the specimen, to venture the suggestion that the neoplasm was to be regarded as the "hepatic analogue of the Wilms's tumour"—a view which he had been relieved to find endorsed by Dr. R. A. Willis in his notable text-book "The Pathology of Tumours".

It seemed clear that while epithelial tumours, properly designated hepatoblastomata, could arise from liver tissue during fœtal or early post-natal life, some among them exhibited participation of the non-epithelial or stromal components, inseparable from which appeared to be a propensity to metaplastic change. Many patterns might be produced between the purely epithelial tumours on the one hand, and those which had, along with their epithelial constituents, a liberal admixture of mesenchymal derivatives. In that feature of hepatoblastoma lay the parallel with nephroblastoma, a parallel rendered the more convincing by the fact that both groups of tumours had identical kinds of seemingly heterotopic tissue—muscle tissue, plain and striated, cartilage, and osteoid tissue. In neither of the embryonic tumours under consideration, renal or hepatic, were tissues utterly foreign to the part, such as skin, respiratory epithelium, or central nervous tissue, ever to be found; in other words they were not teratomata.

In conclusion, Dr. Webster said that the view of Nicholson, that in the developing kidney and its embryonic tumours both epithelial and non-epithelial components developed by divergent differentiation from a common undifferentiated blastema, might be said to be established beyond criticism. It seemed not unreasonable to suggest that a similar situation obtained with respect to the developing liver and its tumours. Orthodox teaching was that all the epithelial elements, and those only, in the liver arose from the hepatic diverticulum of the primitive gut, and that its capsule, supporting tissue and vessels sprang from the mass of mesenchymal cells enveloping such diverticulum. It might, however, be questioned whether the distinction between entodermal and mesodermal components of the liver could be so sharply drawn, and the suggestion arose, from the facts established with regard to the development of the kidney, that indifferent entodermal and mesodermal cells might together form an hepatic blastema vested with the capacity for producing all the structures of the organ.

If the essential nature of nephroblastoma and hepatoblastoma was as he had endeavoured to portray it, it followed that the term "mixed tumour", as it had been applied to nephroblastoma particularly, was inappropriate and misleading. In the first place, in about one-third only of the embryonic tumours of the kidney or liver did the apparently exotic muscle and skeletal tissues appear; a second consideration was that no tissue that was not indigenous to the kidney or liver, indigenous in the sense that the potentiality for its differentiation was inherent in the embryonic blastema or protophase of the organ, was ever to be found in embryonic tumours of such nature. They could not therefore be regarded as teratomata, and they were "mixed" only in the sense that the cells of the embryonic primordium from which they stemmed were endowed with the capacity for divergent differentiation.

THE MEDICAL SCIENCES CLUB OF SOUTH AUSTRALIA.

A MEETING of the Medical Sciences Club of South Australia was held in the Anatomy Lecture Theatre, Frome Road, Adelaide, on May 4, 1951.

Developments in Rabbit Ear Chamber Technique.

PROFESSOR J. S. ROBERTSON read a paper on developments in rabbit ear chamber technique. He briefly reviewed the history of microscopic observations of living cells and tissues and pointed out that methods involving use of the frog's foot, the frog's mesentery and the tadpole's tail had been in use since 1813. The first ear chambers had been

inserted by Sandison in 1925, and the technique had been developed by Clark and his school in Pennsylvania and later by Florey and his school in Oxford. Professor Robertson described various types of chambers, together with the technique of insertion and of observation of the organized tissue. He discussed techniques for obtaining access to the organized tissue for the purpose of injection or implantation. Some of the problems which had been and could be tackled with the technique were then briefly described. Some tentative results of an experiment still in progress were presented. These had to do with the implantation of coloured antigenic azoproteins and the detailed cytological study of their uptake by cells and their subsequent fate. Within about six hours the dye-protein complex could be seen to be localizing down to the cytoplasm of the macrophages. Those cells divided (beginning one or two days after implantation) and could be seen to cast off fragments of cytoplasm containing dye which were then ingested by other macrophages. It was suggested that that might represent a mechanism for the distribution of antigen among many cells. Some possible methods of pursuing this study with a view to obtaining clues on the cytology of antibody production were then briefly discussed.

Out of the Past.

In this column will be published from time to time extracts, taken from medical journals, newspapers, official and historical records, diaries and so on, dealing with events connected with the early medical history of Australia.

ACTING PRINCIPAL SURGEON BALMAIN TO GOVERNOR HUNTER.[1]

[*Historical Records of New South Wales.*]

General Hospital at Sydney,
16 October, 1795.

Sir:

The distressed state of these settlements for the want of a due proportion of medical assistance renders it incumbent on me to state the same to your Excellency, and to request that you will be pleased to use such means as shall appear to yourself most proper, to be adopted for the better accommodation of the colony in that respect.

The duty of this place is at present performed by an assistant surgeon and myself, but more would be absolutely necessary to do the duty, if sickness should prevail, and even now the task is a laborious one, and at times attended with inconvenience to the patient. At Norfolk Island there is but one assistant surgeon, and but one at Parramatta, where the country is inhabited at a great distance from the town.

At the Hawkesbury the business is entrusted to a convict who has not much professional skill, and if sickness or other causes should at any time befall the gentlemen that are detached, bad consequences would naturally follow. Under these circumstances if your Excellency would be pleased to order any of the gentlemen that can be spared from either of His Majesty's ships to be sent on shore for the purpose of doing duty at the hospital until you may be enabled to devise some other means of remedying the present inconvenience you would thereby essentially serve the settlement.

I have, &c.,
W. BALMAIN.

Correspondence.

THE ACADEMIC ASPECT OF MEDICAL EDUCATION.

SIR: In his address on "The Academic Aspect of Medical Education" (THE MEDICAL JOURNAL OF AUSTRALIA, June 9, 1951), Professor Abbie has done a service to the cause of medical education in Australia by emphasizing the necessity for developing the study of medical science in our universities.

However, he has weakened his case and I fear done his cause disservice by his failure, in some respects, to face realities.

Many of his statements are questionable, and I am afraid will not be acceptable to members of the medical profession.

Quite early in his address he states: "It is undoubtedly true that the doctor's job is to detect, diagnose and treat physical ills." Such a definition of the "doctor's job" is rather crude and will be repugnant to most doctors. The vast majority of practising doctors still treat patients. True, they must know as much as possible about the normal and abnormal structure and function of the human body, and the diseases to which it is subject, but, as Wilfred Trotter pointed out in 1932, the practice of medicine is a technical art and not an applied science. In the intervening years much has been done to raise the status of the practice of medicine, and we are now seeing its establishment as an applied science.

The professor later states: "There is general belief that clinical teachers should rival practising colleagues in practical skill", only to question its validity, and he quotes Gilbert Ryle in support of his criticism. Both his development of this theme and his quotation are to me unimpressive. I would refer him to the writings of the late Sir Thomas Lewis, an outstanding advocate of the importance of establishing clinical science within the university. Lewis said: "If you would learn to do a thing, you go to one who does it well; you watch, you listen, and your own first attempts are made under supervision."

These are but accessory arguments to his main theme, which is, of course, that universities should teach academic medicine rather than practice. This is a proposition of the utmost importance and one which is exercising all who think seriously on the subject of medical education today.

However, in discussing this subject I think we must face realities, and in his penultimate paragraph, I am afraid Professor Abbie is carried away by his enthusiasm into the realm of make-believe.

He states that "the prevailing viewpoint is that medical schools exist to produce medical practitioners. This is not the case". He then produces his arguments in the form of deductive reasoning. His premises are "Universities do not exist to promote technical instruction as such. Their purpose is to foster education, and on the medical side they claim no more than to teach the medical sciences as a branch of education. Any technical ability that may accrue *en passant* is purely a by-product" and "Medical schools are all within universities".

I am afraid his argument fails because his first premise is not true. Not only all the universities in Australia with medical schools, but also those in Great Britain and North America require their students to spend a large amount of time in the later years of the medical course attending classes, demonstrations and hospital practice in order to acquire technical ability in what may be called the practical art of medicine. Moreover, these universities insist on the production of evidence of such attendance, and also conduct practical examinations to test technical ability in clinical subjects before students are given a degree in medicine. Surely if this is so, it is futile to state that at present university medical schools claim no more than to teach medical science as a branch of education, and that any technical ability is purely a by-product.

Let me here interpose that several university medical schools in North America have instituted periods of apprenticeship to general practitioners for their students in the final year of their course, in order to prepare them for the practice of medicine.

However, there has been a great deal of evidence accumulating that universities should take stock of their position in this respect, and seriously consider whether they should not attempt to come closer to the university ideal, for such it must be considered, enunciated by Professor Abbie.

Two States in Australia, New South Wales and Queensland, have had enacted legislation requiring graduates in medicine to serve for a year in practice at an approved hospital before they can be fully registered as medical practitioners. Such a requirement has recently been introduced also in Great Britain. The University of Queensland has reorientated the medical curriculum so that the sixth year will be entirely devoted to clinical practice in hospital, which gives an opportunity of improving the status of "academic medicine" or clinical science in the earlier years of the course.

I think that all these moves are pointers indicating the trend of thought in respect to medical education. Perhaps the ideal would be for the university to confine its activities to academic medicine, with a university hospital for its laboratory of medical science, and for the State to demand a further year or more of practical experience in hospital or apprenticeship to a practising doctor before granting registration.

[1] From the original in the Mitchell Library, Sydney.

This letter, sir, is long, outspoken and critical, but I hope that Professor Abbie and those who have had the interest to read it will realize that I do not disagree with his main theme. As I said at the beginning, I thank him for an important contribution, but I consider that to make any progress we must first face the position as it exists, and not take too much for granted.

Yours, etc.,
NEVILLE G. SUTTON.

Brisbane,
June 18, 1951.

ALCOHOLICS ANONYMOUS.

SIR: Alcoholics Anonymous as a general body of alcoholics practising group therapy is, no doubt, well known to all medical practitioners, but it is felt that the matter ends there, and it is the purpose of this letter to bring to the notice of doctors the existence of the "Russell Group" of Alcoholics Anonymous.

The Group is properly organized and affiliated with the parent body in America. It has been functioning continuously for the past five years and at present consists of about fifteen members of both sexes. There is a central meeting place in the city where weekly gatherings are held. We have the assistance as leaders of a practising psychologist and a social worker and also the active support of several leading Melbourne psychiatrists.

The Group, it is felt, could be very much enlarged and we should welcome new members to our circle. Accordingly if any reader is treating a patient for alcoholism who he thinks might be assisted by active participation in Alcoholics Anonymous, the Group will be only too pleased to welcome him or her to its ranks. There is no expense attached to membership.

Any practitioner interested should contact by letter the Secretary, Russell Group of Alcoholics Anonymous, c.o. British Medical Association, 426 Albert Street, East Melbourne.

Yours, etc.,
RUSSELL GROUP OF ALCOHOLICS ANONYMOUS.

Melbourne,
June 4, 1951.

WHY DIET THE DIABETIC?

SIR: So many important discoveries have resulted from the questioning of established practices, that it was with high enthusiasm that I tackled Dr. Bruce Hunt's article entitled "Why Diet the Diabetic?" which appeared in the journal on January 20, 1951, page 114.

Here, surely, is the answer to the diabetic's prayer—"to eat normal meals in a normal manner, varying both quantity and quality as the spirit moved him". While if he were anything like 90% of the patients in the article, only one daily injection of the same old dose of insulin would be required to achieve this state of bliss.

My attention was recently drawn to this article by several diabetics, including the President of the Diabetic Association of Australia. I hope, Mr. Editor, you will allow me space to discuss a few of the points involved, because this article is confusing, if only because it completely neglects to consider the advances made in the knowledge of diabetes over the past quarter of a century, while at the same time giving the impression of being an up-to-date presentation.

Dr. Hunt's first error is to assume that there is a certain constant amount of insulin in the normal human's bloodstream, and that in the case of a diabetic there is a deficiency which can be made up for by a constant daily dose of insulin, no matter what the diet.

Of course, the error here is the complete neglect of the work that shows that the secretion of insulin in the normal varies with the blood sugar level and hence with the carbohydrate eaten. This is demonstrated by the following experiments: (i) Direct measurements of the blood insulin levels when the blood sugar was varied in the perfusate (Anderson). (ii) Comparing the effect on the blood sugar level of injecting the same amount of glucose into the pancreatic artery or into a peripheral artery (Kosaka). (iii) The maintenance of normal blood sugar levels after several live pancreases have been transplanted into the same animal (Houssay). (iv) Studies on the insulin content of the pancreas (Haist and Best). (v) The abnormal glucose tolerance tests seen in human diabetics in whom the blood sugars were initially normal twenty-four hours after protamine zinc insulin.

All this indicates that if a human patient is given a constant amount of insulin daily, it is necessary that he receive a constant and accurately estimated amount of food if he is to avoid the Scylla of hypoglycæmia, on the one hand, and the Charybdis of excessive hyperglycæmia on the other.

The second point I want to make concerns the relationship between carbohydrate intake and the amount of insulin necessary to completely control the diabetic. Because this is not a direct arithmetical relationship, Dr. Hunt seems to have assumed that no relationship exists, and furthermore, quotes an original experiment done "as long ago as 1932" to prove it. However, if Dr. Hunt had taken the trouble he could have discovered that Allen in 1924 showed the type of relationship that existed, and that with higher intakes of carbohydrate the "glucose equivalent of insulin" was increased. But although the mechanism became more efficient with higher amounts of carbohydrate, nevertheless, it never reached the incredible figure achieved in Dr. Hunt's experiment where, with extra carbohydrate added to the diet, no change took place in the insulin requirement.

Since this experiment is the only evidence for many of the views expressed in the article, it might be wise to look at it closely. The protein and fat intake of 20 diabetics was kept constant, while the carbohydrate was increased from 80 to 140 grammes a day "to or above 250 grammes a day". The result of this increase was that "six months later 18 of the 20 patients needed less insulin".

Now I do not want to appear captious, but on calculating from these figures I find that in six months each patient would have received between three and five stone weight in extra carbohydrate. This extra weight must have gone somewhere, and if the patients were well controlled a lot of it must have been turned to fat. Most authorities are agreed that (to quote Dr. Hunt) "excessive fat magnifies insulin requirement beyond all reason". Yet, we find that "18 of the 20 patients needed less insulin". I wonder if the experimenter has omitted some details, or if he has been misprinted.

I will not intrude further, Mr. Editor, into your valuable pages except to mention that at the meetings of the American Diabetes Association in, 1948, 1949 and 1950 that I attended, the several hundred diabetic specialists present seemed fairly unanimous in their condemnation of the "free diet" for diabetics.

Yours, etc.,
DAVID MONK ADAMS.

Department of Physiology,
University of Sydney,
June 22, 1951.

Post-Graduate Work.

MELBOURNE PERMANENT POST-GRADUATE COMMITTEE.

Clinical Post-Graduate Week.

THE clinical post-graduate week, which the honorary medical staff of the Royal Melbourne Hospital arranged to conduct in September, has been postponed and will now be held on October 24, 25 and 26. The symposium on "Infectious Diarrhœa" will be held on Monday and Tuesday, October 22 and 23.

Inquiries and enrolments for courses should be addressed to the Secretary of the Melbourne Permanent Post-Graduate Committee, 394 Albert Street, East Melbourne. Telephone: JM 1547.

Refresher Course in Gynæcology and Obstetrics.

The following is the programme for the general practitioners' refresher course in gynæcology and obstetrics to be held at the Women's Hospital, Carlton, Melbourne, from August 13 to 24, 1951, which was announced in the issue of July 14, 1951.

Monday, August 13: 9.30 a.m., Dr. M. Mackie, "Difficulties Associated with Induction of Labour". 11.15 a.m., Professorial Unit, "Vaginal Repair" (demonstration). 2.15 p.m., Dr. W. McI. Rose, "The Role of the Physician in an Obstetrical Hospital".

Tuesday, August 14: 9.30 a.m., Dr. N. De Garis, "Ante-Natal Problems" (demonstration). 11.15 a.m., Dr. J. W. Johnstone, "Surgery Associated with Sterility". 2.15 p.m., Dr. N. Hurse, "Role of Irradiation Therapy in Non-Malignant Gynæcological Conditions".

Wednesday, August 15: 9.30 a.m., lecture. 11.15 a.m., Dr. G. B. Bearham, "Pruritus and Vulval Conditions" (demonstration). 2.15 p.m., Dr. Colin Macdonald, "Contribution of Radiology to Obstetrics and Gynæcology".

Thursday, August 16: 9.30 a.m., Professorial Unit, "Difficulties Encountered in Cæsarean Sections". 11.15 a.m., Dr. D. F. Lawson, "Abdominal Hysterectomy" (demonstration). 2.15 p.m., Dr. K. McCaul, "Analgesia in Labour". 3 p.m., Dr. Gordon Ley, "Sterility".

Friday, August 17: 9.30 a.m., Dr. W. J. Rawlings, "Post-Partum Hæmorrhage". 11.15 a.m., Dr. A. Hill, "Cancer Surgery" (demonstration). 2.15 p.m., Professorial Unit, obstetrical and gynæcological quiz.

Monday, August 20: 9.30 a.m., Dr. G. Simpson, "Slow Labour". 11.15 a.m., Professorial Unit, "Abdominal Hysterectomy" (demonstration). 2.15 p.m., Dr. J. W. Johnstone and Dr. W. Rawlings, obstetrical and gynæcological quiz.

Tuesday, August 21: 9.30 a.m., Dr. W. M. Lemmon, "Why the Breech Baby May Die". 11.15 a.m., Dr. C. K. Churches, "Vaginal Repair" (demonstration). 2.15 p.m., Dr. G. B. Bearham and Dr. G. Simpson, obstetrical and gynæcological quiz.

Wednesday, August 22: 9.30 a.m., lecture. 11.15 a.m., Dr. N. B. Hattam, "Stress Incontinence Treated by Vaginal Repair". 2.15 p.m., Dr. D. Lawson and Dr. W. M. Lemmon, obstetrical and gynæcological quiz.

Thursday, August 23: 9.30 a.m., Professorial Unit, "Assessment of Disproportion". 11.15 a.m., Dr. B. Anderson, "Endometriosis" (demonstration). 2.15 p.m., Dr. A. Hill and Dr. R. Rome, obstetrical and gynæcological quiz.

Friday, August 24: 9.30 a.m., Dr. R. Rome, "Labour Ward Emergencies". 11.15 a.m., Dr. G. Godfrey, "Cancer Surgery" (demonstration). 2.15 p.m., Dr. H. F. Bettinger, "Macroscopic Diagnosis in Gynæcological Pathology".

In addition, there will be normal ward rounds by the honorary medical staff.

Residence at the hospital during the period is advised and will be available. It will be necessary for those attending to demonstrate a throat swab "negative" to hæmolytic organisms before commencing the course.

Enrolments should be made with the Secretary of the Committee at the above address. The tuition fee, £10 10s., is payable to the Post-Graduate Committee; the fee for residence, £3 10s. per week, is payable to the hospital.

THE POST-GRADUATE COMMITTEE IN MEDICINE IN THE UNIVERSITY OF SYDNEY.

Clinical Meeting at Balmoral Naval Hospital.

A CLINICAL MEETING will be held at the Balmoral Naval Hospital, Balmoral, Sydney, on Tuesday, August 14, 1951, at 2 p.m., when Dr. Francis F. Rundle will speak on "Recent Surgical Advances of Interest to the Practitioner". Clinical cases will be shown at 4 p.m. after afternoon tea. All members of the medical profession are invited to attend.

Congress Notes.

AUSTRALASIAN MEDICAL CONGRESS (BRITISH MEDICAL ASSOCIATION).

THE Executive Committee of the Eighth Session of the Australasian Medical Congress (British Medical Association) to be held at Melbourne from August 22 to 29, 1952, has forwarded the following information.

Secretaries of Sections.

The following is a list of Sections with the names and addresses of their secretaries.

Section of Anæsthesia.—Dr. V. Brand, 396 New Street, Gardenvale, Victoria.

Section of Dermatology.—Dr. J. Conquest, 22 Collins Street, Melbourne.

Section of History of Medicine.—Dr. K. Bowden, 12 Collins Street, Melbourne.

Section of Medicine.—Dr. W. E. King, 8 Collins Street, Melbourne.

Section of Naval, Military and Air Force Medicine.—Dr. J. Glyn White, 85 Spring Street, Melbourne.

Section of Neurology and Psychiatry.—Dr. J. Game, 61 Collins Street, Melbourne.

Section of Obstetrics and Gynæcology.—Dr. W. J. Rawlings, 12 Collins Street, Melbourne.

Section of Ophthalmology.—Dr. J. McB. White, 12 Collins Street, Melbourne.

Section of Orthopædics and Physical Medicine,—Dr. J. J. Woodward, 12 Collins Street, Melbourne.

Section of Oto-Rhino-Laryngology.—Dr. C. Pyman, 61 Collins Street, Melbourne.

Section of Pathology, Bacteriology, Biochemistry, Experimental Medicine and Forensic Medicine.—Dr. G. Harkness, 8 Fernhurst Grove, Kew, Victoria.

Section of Pædiatrics.—Dr. H. Williams, Children's Hospital, Carlton, Victoria.

Section of Public Health, Industrial Medicine and Tropical Medicine.—Dr. R. J. Farnbach, 22 Britten Street, Glen Iris, Victoria.

Section of Radiology and Radiotherapy.—Dr. P. H. Davis, 49 Spring Street, Melbourne.

Section of Surgery.—Dr. S. Reid, 85 Spring Street, Melbourne.

Royal Australasian College of Surgeons.

GORDON CRAIG SCHOLARSHIPS.

THE Council of the Royal Australasian College of Surgeons invites applications for the eighth award of Gordon Craig Scholarships.

1. These scholarships are awarded for the purpose of furthering post-graduate education in surgery and surgical research.
2. Favourable consideration will be given to applicants who intend to present for a senior surgical qualification.
3. Applicants must have been qualified for at least two years.
4. Scholarship holders will be required to carry out whole-time duty at a medical school and/or research institute and/or hospital, although this condition may be varied in exceptional cases.
5. The amount of each scholarship will be at the discretion of the College, but the College is prepared to grant up to £400 a year to suitable applicants.
6. Forms of application, together with details of the regulations governing the award of the scholarships, are available from the Secretary of the Royal Australasian College of Surgeons, Spring Street, Melbourne, C.1.
7. Applications should be lodged with the Secretary and reach him not later than January 31, 1952.

COURSE FOR THE FINAL FELLOWSHIP EXAMINATION.

SUBJECT to the receipt of a satisfactory entry, the Royal Australasian College of Surgeons will conduct, in Melbourne, a course of lecture demonstrations for the final Fellowship examination. The course will begin early in March, 1952, and will conclude at the end of April, 1952. A detailed syllabus is available on application. The fee for the course is £10 10s., *plus* exchange on cheques drawn on banks outside Melbourne, and should be forwarded with entries.

FINAL FELLOWSHIP EXAMINATION.

THE next meeting of the Court of Examiners for the final examination for Fellowship of the College will be held at the College in Melbourne beginning on Thursday, May 1, 1952. Candidates who desire to present themselves at this examination should apply, on the prescribed form, to the Censor-in-Chief for permission to do so on or before April 1, 1952. The appropriate forms are available from the Secretary, Royal Australasian College of Surgeons, Spring Street, Melbourne, C.1.

Candidates who have been approved by the Censor-in-Chief, but who have not yet presented for examination, may present at this examination, provided they notify the Secretary of their intention to do so by April 1, 1952.

The examination fee is £21, *plus* exchange on cheques drawn on banks outside Melbourne, and must be paid to the Secretary by April 1, 1952.

Notice.

THE ARTHUR WILSON MEMORIAL FUND.

THE following donations have been received for the Arthur Wilson Memorial Fund, which will be devoted to research into problems of childbirth. They are acknowledged with thanks. Donations may be sent to Dr. C. K. Churches, Honorary Treasurer, 122 Flinders Street, Melbourne, C.1, and will be acknowledged in this journal.

Previously acknowledged, £1977 14s. Dr. Arthur J. Day £25, Dr. and Mrs. Robin Charlton £25, Dr. Alan J. G. Mackay £21, Dr. H. C. Disher £15, Dr. Edgar M. H. Inglis £10 10s., Dr. J. G. Moreland £10 10s., Dr. W. F. Cooper £5 5s., Dr. Norman R. Dale £5 5s., Dr. N. N. Harrington £5, Dr. Robert H. L. Dunn £2 2s., Dr. and Mrs. J. S. A. Rogers £2 2s., Dr. K. Gardner Kerr £2 2s., Dr. R. R. Wettenhall £2 2s. Total, £2108 12s.

Obituary.

OWEN PERDRIAU.

WE are indebted to Dr. H. Hastings Willis for the following appreciation of the late Dr. Owen Perdriau.

Dr. Owen Perdriau, medical officer in charge of the Repatriation Clinic, Sydney, died on June 21, 1951, aged sixty-three years. Both his parents were Australian-born members of pioneer families, and he showed, during an arduous career, many of the sterling qualities of the Australian pioneers. He was born at Balmain in April, 1888. His father was an engineer, and Owen at first decided to follow the same profession. He sought a qualification "the hard way", being apprenticed at the age of fifteen years and studying at the Technical College. He obtained a technical qualification, but realized that he needed also academic knowledge, so he matriculated with the purpose of proceeding to a degree in engineering. However, on the advice of his family he abandoned engineering for medicine. In 1915 he interrupted his medical course by enlisting for active service in the first World War. He was a member of the Thirteenth Battalion and was wounded on the Somme, and when his unit met with disaster at Reincourt in May, 1917, he fell into enemy hands. This was more than ordinarily unfortunate as the Germans decided to retaliate on these Australian captives for certain allegedly incorrect treatment of German prisoners in British hands. He was employed for long hours on heavy work under shell-fire around Lille on reduced rations, which at one time consisted for days of potato peelings only. Later, his captors, with their usual teutonic thoroughness, determined to get the most out of their prisoners by employing them on the work for which they were most suited, and learning that Private Perdriau was a medical student, transferred him to Frederickfeld as a nursing orderly in a prisoner-of-war hospital. He was released shortly after the Armistice and returned to Australia, where he continued his medical studies. He graduated in 1924 and in 1925 went to Mungana in north Queensland. Later he practised at Milmerran on the Darling Downs and at Wallumbilla in the Maranoa district in south Queensland. He returned to Sydney in 1927 and was appointed a medical officer in the Repatriation Medical Service at Prince of Wales Hospital, Randwick. In 1929 he was promoted and transferred to Perth. In 1931 he returned to New South Wales, where he spent the remainder of his career. In 1946 he organized the out-patient clinic at Grace Building in Sydney and remained in charge of it until his death. In 1938 he suffered from a coronary occlusion, which caused a long and painful illness, but he recovered and returned to duty for a period of twelve years. Early in 1951 his heart began to fail and did not respond to treatment.

His was a strong yet lovable personality. He was painstaking and thorough in investigation of medical problems and was slow to reach conclusions, but he was very tenacious of his opinion when once found. Thus he

DISEASES NOTIFIED IN EACH STATE AND TERRITORY OF AUSTRALIA FOR THE WEEK ENDED JUNE 23, 1951.[1]

Disease.	New South Wales.	Victoria.	Queensland.	South Australia.	Western Australia.	Tasmania.	Northern Territory.[2]	Australian Capital Territory.	Australia.[3]
Ankylostomiasis	*	..	..	..	..	..	..	..	..
Anthrax	*	..	..	..	..	..	..	..	..
Beriberi	*	*	*	*	*	*	..	*	..
Bilharziasis	*	..	..	..	..	..	..	..	..
Cerebro-spinal Meningitis	..	2(1)	1	..	..	1	..	..	4
Cholera	..	..	..	..	..	..	..	..	..
Coastal Fever(*a*)	..	..	..	..	..	..	*	*	..
Dengue	*	*	..	*	*	*	..	*	..
Diarrhœa (Infantile)	..	..	16(16)	..	..	..	..	..	16
Diphtheria	12(5)	5(4)	3(3)	..	8(3)	..	..	..	28
Dysentery (Amœbic)	*	..	..	..	..	..	..	..	..
Dysentery (Bacillary)	*	1(1)	..	..	16(14)	..	..	..	17
Encephalitis Lethargica	..	..	1	..	..	..	..	..	1
Erysipelas	*	*	*	..	*	*	..	..	..
Filariasis	*	..	..	..	..	..	..	..	..
Helminthiasis	*	..	*	*	*	*	*	*	..
Hydatid	*	1(1)	*	*	..	*	*	..	1
Influenza	*	*	*	..	*	*	..	*	..
Lead Poisoning	*	*	..	*	*	*	*	*	..
Leprosy	..	..	..	..	..	..	..	..	..
Malaria(*b*)	*	..	..	..	1(1)	..	..	..	1
Measles	*	*	*	28(21)	*	*	..	..	28
Plague	..	..	..	..	..	..	..	..	..
Poliomyelitis	21(10)	19(3)	15(8)	26(18)	1(1)	..	..	..	82
Psittacosis	*	*	*	..	*	*	*	*	..
Puerperal Fever	..	1	..	..	..	..	..	..	1
Rubella(*c*)	*	*	..	*	6(4)	*	..	..	6
Scarlet Fever	11(6)	16(9)	4(2)	5(3)	1(1)	3(1)	..	..	40
Smallpox	..	..	..	..	..	..	..	..	..
Tetanus	*	..	..	*	*	*	*	*	..
Trachoma	*	..	*	*	*	*	*	*	..
Tuberculosis(*d*)	35(31)	35(23)	8(3)	2(1)	15(10)	5(2)	..	..	100
Typhoid Fever(*e*)	..	1	..	..	..	..	..	..	1
Typhus (Endemic)(*f*)	..	..	1	..	..	..	..	..	1
Undulant Fever	..	..	..	..	..	..	..	..	..
Weil's Disease(*g*)	*	*	1	*	*	*	*	*	1
Whooping Cough	*	*	*	..	*	*	..	..	..
Yellow Fever	..	..	..	..	..	..	..	..	..

[1] The form of this table is taken from the *Official Year Book of the Commonwealth of Australia*, Number 37, 1946–1947. Figures in parentheses are those for the metropolitan area.
[2] Figures not available.
[3] Figures incomplete owing to absence of returns from the Northern Territory.
* Not notifiable.
(*a*) Includes Mossman and Sarina fevers. (*b*) Mainly relapses among servicemen infected overseas. (*c*) Notifiable disease in Queensland in females aged over fourteen years. (*d*) Includes all forms. (*e*) Includes enteric fever, paratyphoid fevers and other Salmonella infections. (*f*) Includes scrub, murine and tick typhus. (*g*) Includes leptospiroses, Weil's and para-Weil's disease.

acquired a reputation for obstinacy in conference with colleagues. He was unusually frank in his dealings with his fellow men and was fearlessly outspoken, even at times somewhat tactless, but in so gross a manner as to be amusing, never offensive, so that his popularity with his colleagues remained to the end. As an administrator he was conscientious and hardworking and expected others to be so too. Yet his subordinates voted him a good employer, ever ready to correct an error rather than find fault with those who made it. His friends have a happy memory of his many sterling qualities.

ARTHUR NORMAN HOMEWOOD.

WE regret to announce the death of Dr. Arthur Norman Homewood, which occurred on June 25, 1951, at Sydney.

ANGELO BARTOLO VATTONE.

WE regret to announce the death of Dr. Angelo Bartolo Vattone, which occurred on July 6, 1951, at Brisbane.

University Intelligence.

THE UNIVERSITY OF MELBOURNE.

PROFESSOR S. L. TOWSEND will deliver his inaugural lecture as Professor of Obstetrics and Gynæcology in the Anatomy Theatre of the University of Melbourne on August 9, 1951, at 8.15 p.m. His subject will be "Obstetrics Through the Ages".

Corrigenda.

IN the paper by Allan King, Grey Edwards and Peter Gibson entitled "A Survey of Australian Aborigines for Pulmonary Tuberculosis", in the issue of June 30, 1951, an error has been made in the second section on page 934 under the heading "Numbers Examined". In the third line the word "inadvertently" should read "intradermally". The sentence should be: "B.C.G. vaccine was given intradermally to 1087 non-reactors under the age of forty-five years." Apologies are offered to the authors for this mistake.

In the article entitled "The Mortality in Australia from Cancers Peculiar to the Female", by H. O. Lancaster, published in the issue of July 7, 1951, at page 1, Figure I has been incorrectly drawn. The title appearing beside the scale on the left side applies, in fact, to the scale on the right side and vice versa.

Nominations and Elections.

THE undermentioned have applied for election as members of the New South Wales Branch of the British Medical Association:

Gunner, Bruce Warren, M.B., B.S., 1951 (Univ. Sydney), Royal Newcastle Hospital, Newcastle.

Woodgate, Geoffrey Irving, M.B., B.S., 1951 (Univ. Sydney), Grafton Base Hospital, Grafton.

The undermentioned have applied for election as members of the South Australian Branch of the British Medical Association:

Glastonbury, Kevin, M.B., B.S., 1926 (Univ. Adelaide), 66 Tusmore Avenue, Tusmore.

Kneebone, Clive Stuart, M.B., B.S., 1951 (Univ. Adelaide), 62 Anzac Highway, Everard Park.

Vivian, Arthur Brian, M.B., B.S., 1951 (Univ. Adelaide), "Benacre", Glen Osmond Road, Glen Osmond.

The undermentioned have been elected members of the South Australian Branch of the British Medical Association:

Jones, David Lewis, M.B., B.S., 1950 (Univ. Adelaide), 12 Giles Street, Toorak Gardens.

Bateman, Peter Patrick, M.B., B.S., 1950 (Univ. Adelaide), 49 Tusmore Avenue, Leabrook.

Medical Appointments.

Dr. Austin Laurence Waddington has been appointed deputy medical superintendent, Department of Public Health, New South Wales.

Dr. Douglas James Hodges has been appointed government medical officer at Mossman, Queensland.

Dr. T. J. Hansen has been appointed government medical officer at Herberton, Queensland.

Dr. H. D'Arcy Sutherland has been appointed honorary assistant surgeon to the Royal Adelaide Hospital.

Dr. A. C. Savage has been appointed medical superintendent of the Bedford Park Sanatorium, South Australia.

Diary for the Month.

JULY 24.—New South Wales Branch, B.M.A.: Ethics Committee.
JULY 25.—Victorian Branch, B.M.A.: Council Meeting.
JULY 26.—South Australian Branch, B.M.A.: Branch Meeting.
JULY 26.—New South Wales Branch, B.M.A.: Branch Meeting.
JULY 27.—Queensland Branch, B.M.A.: Council Meeting.

Medical Appointments: Important Notice.

MEDICAL PRACTITIONERS are requested not to apply for any appointment mentioned below without having first communicated with the Honorary Secretary of the Branch concerned, or with the Medical Secretary of the British Medical Association, Tavistock Square, London, W.C.1.

New South Wales Branch (Medical Secretary, 135 Macquarie Street, Sydney): All contract practice appointments in New South Wales.

Victorian Branch (Honorary Secretary, Medical Society Hall, East Melbourne): Associated Medical Services Limited; all Institutes or Medical Dispensaries; Australian Prudential Association, Proprietary, Limited; Federal Mutual Medical Benefit Society; Mutual National Provident Club; National Provident Association; Hospital or other appointments outside Victoria.

Queensland Branch (Honorary Secretary, B.M.A. House, 225 Wickham Terrace, Brisbane, B17): Brisbane Associated Friendly Societies' Medical Institute; Bundaberg Medical Institute. Members accepting LODGE appointments and those desiring to accept appointments to any COUNTRY HOSPITAL or position outside Australia are advised, in their own interests, to submit a copy of their Agreement to the Council before signing.

South Australian Branch (Honorary Secretary, 178 North Terrace, Adelaide): All Lodge appointments in South Australia; all Contract Practice appointments in South Australia.

Western Australian Branch (Honorary Secretary, 205 Saint George's Terrace, Perth): Norseman Hospital; all Contract Practice appointments in Western Australia. All government appointments with the exception of those of the Department of Public Health.

Editorial Notices.

MANUSCRIPTS forwarded to the office of this journal cannot under any circumstances be returned. Original articles forwarded for publication are understood to be offered to THE MEDICAL JOURNAL OF AUSTRALIA alone, unless the contrary be stated.

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Members and subscribers are requested to notify the Manager, THE MEDICAL JOURNAL OF AUSTRALIA, Seamer Street, Glebe, New South Wales, without delay, of any irregularity in the delivery of this journal. The management cannot accept any responsibility or recognize any claim arising out of non-receipt of journals unless such notification is received within one month.

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